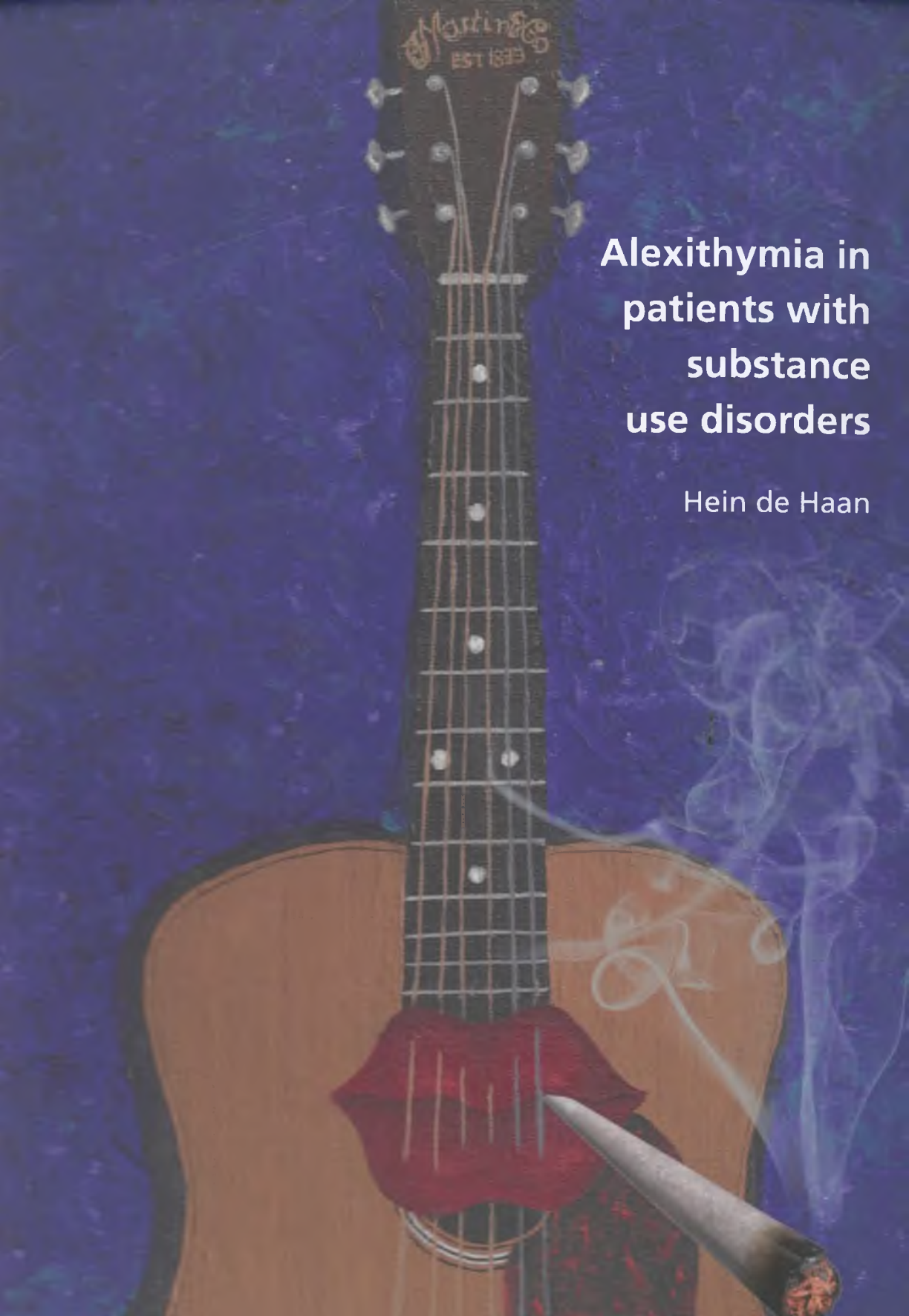

Alexithymia in patients with substance use disorders

Hein de Haan

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Contents

Chapter 1

General introduction

In 2004, a study on the relationship between gastrointestinal symptoms and the Helicobacter bacterium in alcohol dependent patients, reported as a secondary finding that 54% of the patients were alexithymic (van Rossum, Laheij, de Doelder, de Jong & Jansen, 2004). Because these patients were hospitalized in the detoxification units of addiction centers affiliated with the Nijmegen Institute for Scientist-Practitioners in Addiction (NISPA), the study constituted the start of a research project with the aims of replicating these findings and investigating the clinical consequences of this high prevalence of alexithymia.

This chapter begins with a definition of substance use disorders (SUDs). Thereafter, I will successively discuss epidemiological issues, the risks factors for SUDs, affect regulation and SUDs, and alexithymia and SUDs. The chapter ends with an overview of the aims and the structure of this thesis.

Definition and characteristics of SUD and addiction

In the DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders*), substance use disorders were formally classified into substance abuse or substance dependence. In the DSM-5, a combination of the two conditions has been proposed as a single condition, called substance-use disorder (SUD). SUD is characterized by a pattern of continued pathological use of a psycho-active substance, which results in repeated adverse social consequences related to the use of this substance, such as failure to meet work, family, or school obligations; interpersonal conflicts; and legal problems. Substance abuse is particularly related to the social consequences of psychoactive substance use. Substance dependence is a more severe form of SUD and is, in addition to social consequences, primarily defined in terms of physiological (tolerance and withdrawal symptoms) and behavioral symptoms.

Substance abuse and particular substance dependence are often classified under the term "addiction", which has, over the past two decades, been increasingly regarded as a brain disease (Leshner, 1997). However, addiction is not a disorder or classification according to the DSM-IV classification, and there has been debate regarding whether the concept should be limited to the use of psycho-active substances or broadened to include behavioral addictions, such as (pathological) gambling, sex and food intake, as well as some eating disorders. Addiction is characterized by a loss of control over substance intake (or behavior) and compulsive behavior in seeking and taking substances (or performing the pathological behavior), even in the face of dire consequences.

The recently introduced DSM-5 criteria recognize that mental and behavioral aspects of SUDs are more specific to SUDs than the physical domains of tolerance and withdrawal, which are not unique to addiction. However, because all the studies of this thesis have been conducted with the DSM IV as classification model, I will not elaborate on the changes, that have been established by the introduction of DSM-5.

The risk of developing SUDs is determined by the individual genetic constitution, including gene-environment interaction (main genetic and Gene x Environment factors) , with an estimated contribution of 40% - 60% and by shared (familial factors) and non-shared environment (such as access to substances and stress) (Kendler, Myers & Prescott, 2007; Volkow & Li, 2005). It is believed that for many SUD patients, the vulnerability of their disorder persists for a lifetime, with recurring periods of craving or relapse even after long intervals of abstinence. This substantial proportion of SUD patients suffers from a chronic disease course (McLellan, Lewis, O'Brien & Kleber, 2000). These insights motivated the American Society of Addiction Medicine (ASAM) to release a new definition of addiction in 2010: "Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry". This definition emphasizes that addiction is a chronic brain disorder and not simply a behavioral problem involving alcohol, drugs, gambling or sex to excess (American Society of Addiction Medicine, 2010). However, in this document, the ASAM mentions five features of addiction that are not intended to be used as "diagnostic criteria": 1) inability to abstain consistently; 2) impairment of behavioral control; 3) craving or increased "hunger" for drugs or rewarding experiences; 4) diminished recognition of significant problems with one's behaviors and interpersonal relationships; and 5) dysfunctional emotional responses. However, each feature is not equally prominent in every case of addiction. The diagnosis of addiction requires a comprehensive biological, psychological, and social assessment by a trained and certified professional (American Society of Addiction Medicine, 2010).

Epidemiology of SUDs: prevalence and costs

In the United States (U.S.), approximately 12.5% of men and 5% of women meet the criteria for an alcohol use disorder (AUD, abuse or dependence) during the previous year, and an estimated 42% of men and 20% of women will experience AUD during their lifetimes (Hasin, Stinson, Ogburn, & Grant, 2007). In 2010, 22.6 million Americans (8.9%) 12 years old or older were current (past month) illicit drug users, and 22.1 million individuals 12 years old or older were classified as having SUD in the past year (8.7%). Of these individuals, 2.9 million were classified as having dependence or abuse of both alcohol and illicit drugs, 4.2 million had dependence or abuse of illicit drugs but not alcohol, and 15.0 million had dependence or abuse of alcohol but not illicit drugs (Substance Abuse and Mental Health Services Administration, 2011) In the Netherlands, the percentages are slightly lower, with 19.1% experiencing a SUD in their lifetime (male: 27.7%; female: 10.3%) and 5.6% (male: 7.6%; female: 3.6%) over the past year (de Graaf, ten Have & van Dorsselaer, 2010).

SUDs, including both AUD and nicotine use disorders, are a cause of extreme human suffering, with societal costs estimated at more than $600 billion dollars annually in the United States, consisting of health- and crime-related costs and losses in productivity, not to mention incalculable personal and social devastation (Harwood, 2000; Office of National Drug Policy, 2004). Alcohol-related costs exceed 1% of the gross national product in high-income and middle-

income countries, and tobacco use alone is the leading cause of preventable death in the United States and is responsible for more than 400,000 deaths per year (Rehm et al., 2009). The societal costs of SUD in the Netherlands have never systematically been investigated. In 2001, the costs of treatment for AUD, together with losses in productivity and traffic accident- and crime-related consequences, were estimated at 2.6 billion euros annually (KPMG Bureau voor Economische Argumentatie, 2001).

Another way of looking at the global burden of psychoactive substance use is to calculate Disability Adjusted Life Years (DALY). They are computed by adding the years of life lost due to premature mortality and to living with disability. The latter are determined from morbidity. Each disease has been given a certain disability weight, which is multiplied with the time spent with that disease, to arrive at the years of life lost due to disability.

An initial estimate of factors responsible for the global burden of disease found that tobacco, alcohol and illicit drugs contributed together to 12.4% of all deaths worldwide in the year 2000. Looking at the DALY's or percentage of total years of life lost due to these substances, it has been estimated that they account for 8.9%, more specifically tobacco 4.1%, alcohol 4.0% and illicit drugs 0.8% (WHO, 2002).

The high prevalence and costs of SUDs warrant research into the risk factors of SUDs to optimize prevention, as well as research into predictors of SUD treatment outcomes to improve these outcomes and thereby reduce societal costs related to SUDs.

Risk factors of SUDs

Although many individuals are exposed to alcohol and drugs, only a small number becomes addicted or develops a SUD. To determine more effective approaches to the prevention and treatment of SUDs, understanding of the sources of individual differences regarding risk is important. These risk factors will be presented based on a biopsychosocial approach. However, research has indicated that in most cases, a combination of genetic and environmental risk factors contributes to developing SUDs (Kendler et al., 2012)

From a biological perspective, the genetic risk factors for SUDs are not very substance-specific in their effects but rather general. In other words, these risk factors index the liability for abuse of various substances (Campbell & Oei, 2010). The genetic and environmental risks for SUDs do not only add together, but they also interact with one another (Schellekens et al., 2012). The impact of genetic variants on SUDs risk is individually small (Kendler et al., 2012). In the case of AUD, most genetic influences also appear to impact intermediate characteristics that interact with environmental events: a flushing or low-level response to alcohol; personality characteristics, including impulsivity, sensation seeking, and neuronal and behavioral disinhibition; and psychiatric symptoms (Schuckit, 2009). From a more psychological point of view, Carroll, Anker and Perry (2009) identified risk factors from preclinical models of nicotine and other drug abuse: age (adolescence); sex and hormonal effects; impulsivity (impulsive choice and impaired

inhibition); dietary preferences (liking sugary foods); novelty reactivity; avidity for exercise; and impoverished vs. enriched environments. Other individual risk factors include depression and aggression, (early life) stress, relief of withdrawal symptoms (Enoch, 2011; Goeders, 2003) and affective dysregulation (Cheetam, 2010). Sociodemographic predictors of alcohol abuse and dependence incidence include younger age, male sex, and never having been married or being separated, divorced or widowed. Among African Americans, the risk of incident alcohol abuse is lower. The risk of incident drug dependence is greater for men, for people of younger ages and for separated, divorced or widowed people. Having a lower socioeconomic status is also more likely to be correlated with incident drug abuse and dependence (Compton, Thomas, Stinson & Grant, 2007; Grant et al., 2009)

Research into predictors of the course of substance use disorders has revealed relevant sociodemographic variables, such as age, relationship (cohabiting/married) and work, as well as substance disorder–related variables. Severity of dependence, poly-drug use, the number and duration of previous treatments, age of onset, motivation, positive family history of alcohol or drugs, comorbid psychopathology, treatment drop-out, female gender and the sum of positive and negative/stressful life events could be predictive for subsequent relapses (Bottlender & Soyka, 2005; Keyes, Hatzenbuehler & Hasin, 2011, McLellan et al., 1994; Moos, McCoy & Moos, 2000; Rounsaville, Dolinsky, Babor & Meyer, 1987)

The next chapter will focus on affect (dys)regulation as one of the psychological risk factors for SUDs (Cheetam, 2010).

Affect (or emotion) regulation and SUDs

Affect, or emotions, usually refers to the relatively brief feelings that are experienced in response to a particular stimulus or situation. Affect has been regarded as an adaptive tendency that is the direct result of situations that hold some evolutionary significance, and it thus plays an important role in facilitating decision-making (Cheetham, Allen, Yuecel & Lubman, 2010). Affective experience can be conceptualized in terms of a trait, a personality characteristic or a temperament with a stable and enduring pattern of affective response or in terms of a state phenomenon, which is a more transient fluctuation in emotional experience (Cheetam et al., 2010). Affect regulation deficits are a putative maintaining factor and a promising treatment target in SUDs. Traits related to disinhibition have been shown to predict alcoholism prospectively, and personality traits related to reward seeking (positive affect) are strongly associated with alcohol use (Sher et al, 2000). A prominent clinical factor in SUDs is difficulty coping with negative affect as a consequence of SUDs. However, to the extent that SUD is also partially conceptualized as an effort to regulate or avoid negative emotions, it is often associated with withdrawal symptoms. AUDs are highly comorbid with anxiety and mood disorders (Grant et al., 2004; Kessler et al.,1997), and they have also been associated with negative affectivity (Caspi et al., 1997). Previous research has supported a causal relationship between negative affect and SUDs (Kassel et al., 2007). The combination of

negative affect and deficits in the ability to regulate affect has implications for the development and maintenance of, as well as recovery from, SUDs. Coping skills moderate the relationship between negative emotions and alcohol use (Holahan, Moos, Holahan, Cronkite, & Randall, 2001), and poor affect regulation skills predict posttreatment levels of alcohol use (Berking et al., 2011) and could increase relapses in situations involving negative emotions (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). Effective emotion regulation skills include the abilities to be aware, identify and label emotions; to interpret emotion-related bodily sensations correctly; and to accept and tolerate negative emotions (Berking et al., 2011; Gratz & Roemer, 2004). Berking et al. (2011) integrated previous findings to argue for the role of specific emotion regulation deficits in harmful dysregulated behaviors, while also providing evidence that severe behavioral dysregulation can be reduced by therapy that primarily targets the emotion regulation skills of tolerance and acceptance.

One of the major problems regarding addictive disorders is that more than 80% of SUD patients fail to seek treatment (SAMHSA, 2007). It has been suggested that this failure could reflect impairments in recognition of the severity of the disorder, often referred to as "denial" (Goldstein et al., 2009). Denial could also be interpreted as a primitive psychological defense mechanism, i.e., a characteristic of higher-order cognitive dysfunction that can be a part of serious psychopathology (Finzi-Dottan & Karu, 2006) and perhaps also pathophysiology. From a neurobiological perspective, recent research has suggested that dysfunctional neuronal networks associated with insight and self-awareness could be responsible (Naqvi & Bechara, 2010). In these neuronal networks, relationships have been suggested between conscious interoception, emotional experience and decision-making as potentially important roles in addiction. Research has also suggested that empathy deficits, which are associated with a lack of emotion perception, are a function of interoceptive deficits related to alexithymia (Bird et al., 2010). In the context of this thesis, the relationship between emotion perception and addiction is important.

A better understanding of the role of affective dysregulation in addiction will aid in clarifying how addictive behaviors originate and are maintained, thereby facilitating the development of preventative strategies and novel treatments. Future studies should continue to identify the affective characteristics that predispose high-risk individuals to later substance use problems (Cheetam et al., 2010). In the next part of this chapter, we will therefore focus on alexithymia as one of the main concepts of affect dysregulation.

Alexithymia

Definition and general characteristics

Alexithymia, literally meaning "no words for emotions", refers to difficulty in identifying and describing feelings, the inability to discriminate between feelings and physical sensations, possessing a limited fantasy life and the inclination toward an externally oriented way of thinking (Sifneos, 1973; Taylor & Bagby, 2004). The prevalence of alexithymia in population-based studies

has varied between 8% and 15%, with most studies showing a slightly higher prevalence in men than in women (Salminen, Saarijarvi, Aarela, Toikka & Kauhanen, 1999). Alexithymia has been associated with increasing age, low educational level, poor perceived health, and depression (Franz et al., 2008; Mattila, Salminen, Nummi & Joukamaa, 2006). In several studies, alexithymic features have been associated with an enhanced risk for a broad spectrum of somatic and psychiatric disorders, especially somatoform, mood, anxiety (PTSD), eating and substance-related disorders (Taylor, Bagby & Parker, 1997).

Alexithymia and response to psychotherapy

Alexithymia is purported to be a negative prognostic factor for psychological treatments, especially with regard to insight/cognitions, emotional awareness and therapeutic alliance. However, when dealing with highly structured behavioral interventions, alexithymic patients seem to perform as well as, or sometimes even better than, non-alexithymic patients (Lumley, Neely, & Burger, 2007). If alexithymia is an (independent) negative predictor of the efficacy of cognitive-behavioral treatment (CBT) for SUD patients, it could be considerably important to adjust CBT interventions, especially the cognitive components, for alexithymic (SUD) patients. Expecting these patients to differentiate, name, and describe difficult experiences, such as craving, withdrawal symptoms, and anxiety and mood states, would be difficult, given the concept of alexithymia but reflects the daily routine of CBT.

Little research has been conducted on the effects of psychotherapy on alexithymia, and the available results have been mixed. Some studies have reported no changes (Iancu, Cohen, Ben Yehuda, & Kotler, 2006), whereas other studies have found a decrease in alexithymia during treatment (Lumley et al., 2007). The interventions in these studies were not specifically aimed at reducing alexithymia; thus, the changes observed could have reflected a reduction in associated symptoms, such as depression, anxiety or psychological stress (Stingl et al., 2008). Only two studies were specifically aimed at reducing alexithymic characteristics (Beresnevaite, 2000; Gay, Hanin & Luminet, 2008). Group psychotherapy in post Myocard Infarct patients, was associated with a decrease in the mean levels of alexithymia, with a resulting favorable influence on the clinical course of these patients with coronary heart disease (Beresnevaite, 2000). The group psychotherapy comprised 3 components: teaching relaxation and increasing motivation to reduce alexithymia; promoting nonverbal expressions of emotion; gestalt techniques and other interventions to facilitate verbal emotional expression (Beresnevaite, 2000). In addition, a decrease in alexithymic scores was obtained in female students with hypnosis, with no correlation with changes in mood state (Gay et al., 2008). In conclusion, there is still little known about which psychotherapeutic interventions are effective in reducing alexithymia in the general and most patient populations. Since no research has been done to reduce alexithymia in SUD patients, a similar lack of knowledge exists about effective psychotherapeutic interventions in these patients.

Alexithymia and interpersonal style

As a consequence of their emotional deficits, alexithymic individuals have problems with interpersonal relationships. It is difficult for them to understand and relate to the emotions of others in addition to their own; thus, they typically exhibit an impaired capacity for empathy (Taylor et al., 1997). Moreover, absent or minimal expression of positive emotions by a patient can trigger negative reactions from therapists. Such negative reactions have been found to contribute to the poor treatment outcomes in highly alexithymic patients (Ogrodniczuk, Piper, & Joyce, 2008). The interpersonal style of alexithymic patients has been characterized by cold, socially avoidant and non-assertive behavior (Spitzer, Siebel-Jurges, Barnow, Grabe, & Freyberger, 2005; Vanheule, Desmet, Meganck, & Bogaerts, 2007; Vanheule, Vandenbergen, Verhaeghe & Desmet, 2010). Little research has been conducted into the relationship between interpersonal styles and alexithymia in SUD patients.

Instruments measuring alexithymia

The Toronto Alexithymia Scale (TAS-20) is the most frequently used assessment instrument for alexithymia, and it includes three factors: (1) difficulty in identifying feelings (DIF); (2) difficulty in describing feelings (DDF); and (3) externally oriented thinking (EOT) (Bagby, Parker, & Taylor, 1994). The TAS-20 can be analyzed in its entirety, or its three components — DIF, DDF, and EOT — can be analyzed separately. As suggested by Taylor et al. (1997), a total score of 61 and above indicates alexithymia, and scores of 51 and below indicate low or absent alexithymia. A score from 52 to 60 represents a moderate degree of alexithymia. Alexithymia might be better conceptualized as a continuous, rather than a categorical variable (Parker, Keefer, Taylor, & Bagby, 2008). However, to provide clinical impressions of the differences in alexithymia in patients, data are often presented for patients with low, moderate and high alexithymia (Taylor et al, 1997).

Another less frequently used self-report scale is the Bermond Vorst Alexithymia Questionnaire (BVAQ) (Vorst & Bermond, 2001). The BVAQ consists of five subscales, each consisting of eight items. This scale is meant to have a two-factor structure, with an affective alexithymia dimension (Emotionalizing, Fantasizing) and a cognitive alexithymia dimension (Identifying, Verbalizing and Analyzing). The TAS-20 and the BVAQ have been criticized for being self-report scales. Many researchers have questioned whether self-report instruments can adequately assess deficits of which alexithymic individuals may not be aware (Kooiman, Spinhoven & Trijsburg, 2002).

To overcome this problem, performing multimethod alexithymia assessments, with a structured interview and an observer scale included, is advised (Dorard et al., 2008). The Toronto Structured Interview for Alexithymia (TSIA) is composed of a 24-item set with 4 lower-order facet scales: DIF, DDF, EOT and imaginal processes (IMP). The 2 lower-order facet scales, DIF and DDF, constitute a single higher-order domain scale, labeled affect awareness (AA), and the other 2 lower-order facet scales, EOT and IMP, constitute a second higher-order domain scale, labeled operative thinking (OT) (Bagby, Taylor, Parker & Dickens, 2006). The Observer Alexithymia Scale (OAS) consists of

five alexithymic features: (1) distant (unskilled in interpersonal matters and relationships); (2) uninsightful (lacking sufficient stress tolerance and insight or self-understanding); (3) somatizing (having health worries and physical problems); (4) humorless (colorlessness and lack of interest), and (5) rigid (being too self-controlled) (Haviland, Warren, Riggs & Gallacher, 2001).

Other, older, instruments to measure alexithymia, such as the Beth Israel Hospital Questionnaire (BIQ) and the Schalling-Sifneos Personality Scale remain undiscussed in this thesis, due to insufficient psychometric properties (Taylor et al., 1997).

Because the TAS-20 is the most frequently used instrument worldwide, and research into alexithymia within SUD populations has predominantly been undertaken using the TAS-20, the research in this thesis was conducted with the (Dutch) TAS-20. The Dutch TAS-20 showed good internal consistency in student and outpatient psychiatric populations, with a Cronbach's α varying between 0.79 and 0.82. The internal consistency for the DIF factor was good, that of the DDF factor was moderate to good, and that of the EOT factor was unsatisfactory (Cronbach's α: 0.52–0.66) (Kooiman et al., 2002).

Previous research on SUDs has shown conflicting results regarding the state or trait characteristics of alexithymia. This issue is related to the stability of the concept of alexithymia, especially as measured with the TAS-20, and which will be discussed in the next subsection.

Alexithymia as a trait or state: the absolute and relative stability of alexithymia

In the literature, there has been an extensive debate on whether alexithymia is conceptualized best as a state or as a trait characteristic. The concept of alexithymia as an enduring trait has been supported by longitudinal studies on clinical populations, but not SUD populations (Tolmunen et al., 2011). However, it has also been suggested that alexithymia could be a temporary or concomitant state reaction to emotional stress resulting from illness, anxiety, and depression (Taylor & Bagby, 2004). This distinction is of clinical importance because if alexithymia were mainly a state-dependent phenomenon, for instance, in response to stress, illness, anxiety, or depression, the need to address alexithymia in the treatment of SUD patients would decrease. Then, the treatment could be focused specifically on the stress, illness, anxiety, and depression components.

The research on alexithymia as a trait or a personality characteristic has focused on the concept of the absolute and relative stability of alexithymia. Previous research has shown that the stability status can change according to the population that is studied (de Timary, Luts, Hers & Luminet, 2008; Honkalampi et al., 2001; Luminet, Rokbani, Ogez & Jadoulle, 2007; Pinard, Negrete, Annable & Audet,1996; Rufer et al., 2004; Saarijarvi, Salminen & Toikka, 2006; Stingl et al., 2008).

This means that the stability shows considerable differences between the diverse populations, which have been examined on the stability of alexithymia.

Absolute stability refers to the extent to which the average personality scores or trait levels of a population change. This stability is assessed based on mean level differences over time. These differences indicate whether and in which direction the population as a whole is changing (Caspi, Roberts, & Shiner, 2005). A systematic review or meta-analysis of the stability of alexithymia as a personality trait does not exist, but a meta-analysis of longitudinal studies of personality traits, according to the five-factor model, provided evidence for continued plasticity, which refers to change in personality, beyond the age of 30 years old (Roberts, Walton & Viechtbauer, 2006).

Relative, or rank-order, stability indicates the extent to which the relative differences among individuals remain the same over time and is assessed by test-retest correlations (Caspi et al., 2005). In a meta-analysis of the relative stability of personality, also based on the five-Factor model, test-retest correlations were moderate in magnitude over time (Roberts & DelVecchio, 2000). Stability was higher at older age, and lower with increasing intervals between the observations. Roberts and DelVecchio (2000) found that trait consistency was .31 in childhood and increased to .54 during the college years and to .64 at age 30, reaching a plateau of approximately .74 between the ages of 50 and 70 years old, indicating that personality traits continue to change throughout adulthood. Both meta-analyses demonstrated that personality trait development is not only a phenomenon of childhood or adolescence, but continues during adulthood (Roberts & DelVecchio, 2000, Roberts et al., 2006).

A high relative stability of alexithymia in SUD patients is strong evidence for alexithymia being a stable trait or personality characteristic. This evidence could be important in addressing whether the degree of alexithymia is related to the outcomes of therapeutic interventions in SUD patients. A strong relationship between alexithymia and state factors, such as anxiety or depression, and a low relative stability of alexithymia would support a more state-dependent phenomenon. This categorization would argue against alexithymia being an autonomous trait-like SUD vulnerability factor (de Timary et al., 2008). Addressing the other state factors, such as anxiety or depression, would automatically change alexithymia, with less of a need to address alexithymia in SUD patients.

However, if alexithymia is a state-dependent feature, not related to stress, illness, anxiety or depression, the reason to address it in the treatment of SUD patients depends on the relationship with treatment outcome and attrition. When no relationship is found between alexithymia, as a state-dependent phenomenon, and attrition in SUD or treatment outcomes, such as the reduction in substance use or the degree of abstinence, then no specific intervention for alexithymia in the treatment of SUD-patients is needed.

In the next chapter, I will review more specifically the relationships between SUDs and alexithymia.

Alexithymia and SUD

Prevalence and characteristics of alexithymia in SUD patients

Van Rossum et al. (2004) reported that 54% of the patients with alcohol-related disorders referred to inpatient detoxification units, affiliated with NISPA (Nijmegen Institute for Scientist-Practitioners in Addiction), in the eastern and southern parts of the Netherlands were alexithymic, according to the Toronto Alexithymia Scale (TAS-20). However, since an unusual cut-off score for identifying alexithymia (> 56) was used, whereas the conventional cut-off score for alexithymia on the TAS-20 is higher (> 60) (Taylor et al., 1997), this did result in overestimating the number of alexithymic patients. In SUD patients, alexithymia rates of up to 67% have been reported (Thorberg, Young, Sullivan & Lyvers, 2009); however, research on this subject has mainly been based on AUD patients.

Associations were found in a cross-sectional Egyptian study between the degree of alexithymia and the degree of opiate, benzodiazepine and polysubstance use (El Rasheed, 2001). The evidence regarding the associations among alexithymia, alcohol consumption and severity of alcohol dependence is limited, as is the support for alexithymia as a direct risk factor for AUD (Al Birt et al., 2008; Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Junghanns et al., 2005; Loas et al., 1997; Thorberg et al., 2009; Ziolkowski et al. 1995). Evaluations of therapy in alexithymic SUD patients have been scarce, but the limited available findings have shown a negative association between alexithymia and treatment-related outcomes, particularly in AUD patients (Cleland et al., 2005; Loas, Fremaux, Otmani, Lecercle, & Delahousse, 1997; Ziolkowski, Gruss, & Rybakowski, 1995).

Rosenblum et al. (2005) demonstrated less substance abuse in high-scoring alexithymic SUD-patients as a result of group cognitive behavior therapy (CBT), compared to a group receiving motivational intervention (GMI). In contrast, low-scoring alexithymic patients performed better with GMI. However, in the total study population, alexithymia was associated with a lower number of treatment sessions attended and with a higher ASI alcohol composite score at follow-up, i.e., a worse outcome (Cleland et al., 2005). Cocaine-abusing alexithymic outpatients showed better outcomes when treated with clinical management, compared to cognitive-behavioral relapse prevention (Keller, Carroll, Nich & Rounsaville, 1995). I have already described that a lack of knowledge exists about effective psychotherapeutic interventions specifically aimed at reducing alexithymia in general and in particular in SUD patients. Based on the limited available research, it is as well hardly possible to indicate which form of therapy focusing on SUDs and not specifically aimed at reducing alexithymia, would be more successful in alexithymic SUD patients.

Stability of alexithymia in SUD

Studies of the stability of alexithymia have only been conducted in detoxifying or recently detoxified SUD populations (de Timary et al., 2008; Haviland, Macmurray & Cummings, 1988; Pinard et al., 1996) and thus have been conflicting. One study indicated a change in alexithymia

during detoxification, with the suggestion that alexithymia is a state phenomenon resulting from anxiety and depression (Haviland, Macmurray, & Cummings, 1988). Another study showed no changes in mean levels after detoxification, concluding that alexithymia is a stable trait (Pinard, Negrete, Annable, & Audet, 1996). These studies did not examine both absolute and relative stability at the same time. More recently, an absolute reduction in alexithymia was found in AUD patients during withdrawal, with high relative stability over a short time period (de Timary, Luts, Hers, & Luminet, 2008). Alexithymia was defined as a stable personality trait, rather than a state-dependent phenomenon, because of the limited influence of anxiety and depression and because of high relative stability (de Timary et al., 2008).

Biological, familial and genetic aspects of alexithymia in SUD

A substantial genetic influence of alexithymia was demonstrated in an extensive Danish twin pair study, and this result was replicated, controlling for depressive symptoms, in an Italian twin pair study (Jorgensen, Zachariae, Skytthe & Kyvik, 2007; Picardi et al., 2011). Based on this genetic influence, a higher percentage of alexithymia is to be expected in parents and other family members of alexithymic patients. This relationship could also explain a family history of alcoholism (FHA) in these parents and other family members, because of the relationship between alexithymia and alcohol use disorders (Thorberg et al., 2009; Lyvers, Onuoha, Thorberg & Samios, 2012). However, apart from a genetic mechanism, problems with alcohol in parents could also cause parents to neglect their children's emotional states during child rearing, leading to emotional self-regulation deficits, such as alexithymia. The latter was shown in a recent meta-analysis on parental bonding and alexithymia (Thorberg, Young, Sullivan & Lyvers, 2011). A lack of maternal care, but also maternal and paternal overprotection, was correlated with alexithymia (Thorberg et al., 2011). In line with this finding, disturbed family functioning was correlated with the development of alexithymic characteristics (Lumley, Mader, Gramzow & Papineau, 1996). This finding was also demonstrated for a history of neglect or (sexual) abuse, independent of whether the abuse occurred within the family (Berenbaum, 1996; Bermond, Moormann, Albach & van Dijke, 2008; Evren, Evren, Dalbudak, Ozcelik & Oncu, 2009).

As one of the neurobiological explanatory models, alexithymia has been correlated with dysfunction in interhemispheric transfer (Larsen, Brand, Bermond & Hijman, 2003; Paul et al., 2007). In fetal alcohol syndrome (FAS), agenesis, malformations and hypoplasia of the corpus callosum are common (Swayze et al., 1997; Roebuck, T.M., Mattson, S.N. & Riley, 1998), and these issues could form an argument for a more general interhemispheric transfer problem in children of mothers with alcohol abuse problems, thus accounting for higher scores of alexithymia (Romei et al., 2008). However, corpus callosum abnormalities were also present in young, alcohol-naïve male subjects at high risk for alcoholism because of alcohol-dependent fathers, with their mothers not having lifetime diagnoses of alcohol dependency and not having used alcohol during pregnancy (Venkatasubramanian, Anthony, Reddy, Reddy, Jayakumar & Benegal, 2007).

In addition, the toxic effects of alcohol exposure on the corpus callosum have been reported as resulting in a reduction in thickness and therefore in a loss of transfer function (Pfefferbaum, Lim, Desmond & Sullivan, 1996; Rohlfing, Sullivan & Pfefferbaum, 2006).

Three previous studies examined the impact of a FHA on alexithymia (Finn, Martin & Pihl, 1987; Rybakowski & Ziolkowski, 1991; Lyvers et al., 2012). One study found strong alexithymic features in non-alcoholic sons with an extensive male-limited generational family history of alcoholism, but not in non-alcoholic sons without any family history or with alcoholic fathers without an extensive family history (Finn et al., 1987). In the second study, no relationship was found between a FHA and alexithymia (Rybakowski & Ziolkowski, 1991). However, both studies used the Schalling-Sifneos Personality Scale for the assessment of alexithymia, which lacks sufficient validity and internal reliability (Taylor et al., 1997). In a recent study in a non-clinical population, an association was found between the TAS-20 and being the offspring of an alcoholic parent, as defined by the Children of Alcoholics Screening Test (Lyvers et al., 2012)

Aims, research questions, and outline of the thesis

The main aim of this thesis is to examine the prevalence, the stability, the familial-history correlates and the clinical implications (of high levels) of alexithymia in SUD patients.

The specific research questions are as follows.

1. *What is the prevalence of alexithymia in three different SUD populations: heterogeneous abstinent SUD patients, homogeneous abstinent AUD patients and heterogeneous SUD patients during detoxification?*

2. *Does alexithymia predict therapy-related outcomes in heterogeneous SUD patients after CBT, and is there a moderation of these results as a result of adding shared decision-making (SDM) as a structured therapeutic intervention?*

3. *Does alexithymia predict therapy-related outcomes in more homogeneous AUD patients after completing an inpatient treatment program based on CBT?*

4. *Is alexithymia a state or trait phenomenon in heterogeneous SUD patients, based on the absolute and relative stability of alexithymia after an inpatient CBT treatment, when controlling for anxiety, depression and therapy-specific variables?*

5. *Is alexithymia a state or trait phenomenon in heterogeneous SUD patients during detoxification, based on the absolute and relative stability of alexithymia in an SUD*

population, when controlling for withdrawal symptoms, including anxiety and depression?

6. *Does a family history of alcoholism (FHA) predict higher levels of alexithymia in SUD patients when controlling for disturbed family functioning?*

In *Chapter 2,* a heterogeneous group of SUD inpatients is assessed for the prevalence of alexithymia and the relationship of alexithymia with SUD characteristics at baseline and with 3-month follow-up results after inpatient cognitive behavioral therapy (CBT) as usual (TAU group) or CBT with an SDM (shared decision-making) intervention (SDM group), as part of a RCT of SDM. Research question 2 is addressed in this chapter.

Chapter 3 covers research question 3. Homogeneous AUD inpatients are assessed for the prevalence of alexithymia and the relationships of alexithymia with AUD characteristics at baseline and with one-year follow-up results after CBT.

Chapter 4 presents the data on the absolute and relative stability of the TAS-20 over a period of 6 months in the same heterogeneous SUD inpatients described in Chapter 2 in a pre-post design, as part of a RCT of SDM. Research question 4, on the state or trait construct of alexithymia, is the main topic of this chapter.

In *Chapter 5,* the state or trait question of alexithymia, research question 5, is addressed by examining the absolute and relative stability among heterogeneous SUD patients at two time points during a 3-week inpatient detoxification period, while controlling for withdrawal symptoms and for personality disorder traits.

In *Chapter 6,* whether familial vulnerability to alcoholism is correlated with the presence and severity of alexithymia in SUD patients, research question 6, is examined.

Finally, in *Chapter 7,* the research questions are answered with an overview of the prevalence of alexithymia in the different populations (research question 1), and a summary and general discussion of the main findings are presented, as well as the scientific and clinical relevance of this thesis.

References

Al Birt, M., Sandor, V., Vaida, A. & Birt, M.E. (2008). Alexithymia, a risk factor in alcohol addiction? A brief research report on romanian population. Journal of Cognitive and Behavioral Psychotherapies, 8, 217-225.

American Society of Addiction Medicine Web: http://www.asam.org (2011). ASAM Public Policy Statement on Treatment for Alcohol and Other Drug Addiction, Adopted: May 01, 1980, Revised: January 01, 2010

Bagby, R.M., Parker, J.D. & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale--I. Item selection and cross-validation of the factor structure. Journal of Psychosomatic Research, 38, 23-32

Bagby, R.M., Taylor, GJ., Parker, J.D.A. & Dickens, S.E.(2006) The development of the Toronto Structured Interview for Alexithymia: Item selection, factor structure, reliability and concurrent validity. Psychotherapy and psychosomatics, 75 (1), 25-39

Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. Child Development, 74, 769.

Bermond, B., Moormann, P.P., Albach, F, & van Dijke, A. (2008). Impact of severe childhood sexual abuse on the development of alexithymia in adulthood. Psychotherapy and Psychosomatics,77, 260-2.

Berenbaum, H. (1996) Childhood abuse, alexithymia and personality disorder. Journal of Psychosomatic Research, 41, 585-95.

Beresnevaite, M. (2000). Exploring the benefits of group psychotherapy in reducing alexithymia in coronary heart disease patients:a preliminary study. Psychotherapy and Psychosomatics 69, 117–122.

Berking, M., Margraf, M., Ebert, D., Wupperman, P., Hogmann, S. G., & Junghanns, K. (2011). Deficits in emotion–regulation skills predict alcohol use during and after cognitive-behavioral therapy for alcohol dependence. Journal of Consulting and Clinical Psychology, 79, 307–318.

Bird, G., Silani, G., Brindley, R., White, S., Frith, U. & Singer, T. (2010). Empathic brain responses in insula are modulated by levels of alexithymia but not autism. Brain, 133, 1515-1525

Bottlender, M. & Soyka, M. (2005). Outpatient alcoholism treatment: Predictors of outcome after 3 years. Drug and alcohol dependence, 80 (1), 83-89

Campbell, J.M. & Oei, T.P. (2010) A cognitive model for the intergenerational transference of alcohol use behaviour. Addictive Behaviors, 35, 73–83

Carroll, M.E., Anker, J.J. & Perry, J. L. (2009) Modeling risk factors for nicotine and other drug abuse in the preclinical laboratory. Drug and alcohol dependence,104, S70-S78

Caspi, A., Harrington, H., Moffitt, T.E., Begg, D., Dickson, N., Langley, J. &Silva, P.A. (1997). Personality differences predict health-risk behaviors in young adulthood: Evidence from a longitudinal study. Journal of Personality and Social Psychology, 73 (5), 1052 - 1063

Caspi, A., Roberts, B.W. & Shiner, R.L. (2005). Personality development: stability and change. Annual Review of Psychology, 56, 453–484.

Cheetham, A., Allen, N.B.,Yuecel, M. & Lubman, D.I. (2010) The role of affective dysregulation in drug addiction. Clinical psychology review, 30 (6), 621-634

Cleland, C., Magura, S., Foote, J., Rosenblum, A. & Kosanke, N. (2005). Psychometric properties of the toronto alexithymia scale (tas-20) for substance users. Journal of Psychosomatic Research, 58, 299-306.

Compton, W.M., Thomas, Y.F., Stinson, F.S., Grant, B.F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States - Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry, 64 (5), 566-576

de Graaf, R., ten Have, M. & van Dorsselaer, S. (2010). De psychische gezondheid van de Nederlandse bevolking. Nemesis 2: opzet en eerste resultaten. Trimbos-instituut, Utrecht, 2010

deTimary, P., Luts, A., Hers, D. & Luminet, O. (2008). Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: relationship to depression and anxiety. Psychiatry Research 157, 105–113.

Dorard, G., Berthoz, S., Haviland, M.G., Phan, O., Corcos, M. & Bungener, C. (2008). Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Comprehensive Psychiatry, 49, 585-592.

El Rasheed, A.H. (2001). Alexithymia in Egyptian substance abusers. Substance Abuse, 22-1, 11-22.
Enoch, M-A. (2011). The role of early life stress as a predictor for alcohol and drug dependence. Psychopharmacology, 214 (1), 17-31.
Evren, C., Evren, B., Dalbudak, E., Ozcelik B. & Oncu, F. (2009) Childhood abuse and neglect as a risk factor for alexithymia in adult male substance dependent inpatients. Journal of Psychoactive Drugs, 41, 85-92.
Finn, P.R., Martin, J., & Pihl, R.O. (1987). Alexithymia in males at high genetic risk for alcoholism. Psychotherapy and Psychosomatics, 47,18-21.
Finzi-Dottan, R. & Karu, T. (2006). From emotional abuse in childhood to psychopathology in adulthood - A path mediated by immature defense mechanisms and self-esteem. Journal of Nervous and Mental Disease, 194 (8), 616-621
Franz, M., Popp, K., Schaefer, R., Sitte, W., Schneider, C., Hardt, J., Decker, O. & Braehler, E. (2008). Alexithymia in the German general population. Social Psychiatry and Psychiatric Epidemiology, 43, 54-62.
Gay, M.C., Hanin, D., Luminet, O., 2008. Effectiveness of an hypnotic imagery interventionon reducing alexithymia. Contemporary Hypnosis 25 (1), 1–13.
Goeders, N.E. (2003). The impact of stress on addiction. European Neuropsychopharmacology. 13, 435–441
Goldstein, R.Z., Craig, A.D. & Bechara, A., Garavan, H., Childress, A.R., Paulus, M.P. & Volkov, N.D. (2009). Neurocircuitry of Impaired Insight in Drug Addiction. Trends in Cognitive Sciences, 13 (9), 372-380
Grant, B.F., Dawson, D.A., Stinson, F.S., Chou, S.P., Dufour, M.C. & Pickering, R.P. (2004). The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. Drug and Alcohol Dependence, 74 (3), 223 -234
Grant, B.F., Goldstein, R.B., Chou, S.P., Huang, B., Stinson, F.S., Dawson, D.A. et al. (2009). Sociodemographic and psychopathologic predictors of first incidence of DSM-IV substance use, mood and anxiety disorders: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. Molecular Psychiatry, 14, 1051 - 1066
Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. Journal of Psychopathology and Behavioral Assessment, 26,41–54.
Harwood, H. (2000). Updating Estimates of the Economic Costs of Alcohol Abuse in the United States: *Estimates, Update Methods, and Data Report prepared by the Lewin Group for the National Institute on Alcohol Abuse and Alcoholism*.
Hasin, D.S., Stinson, F.S., Ogburn, E. & Grant, B.F.(2007). Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry, 64(7):830-42.
Haviland, M.G., Macmurray, J.P. & Cummings, M.A. (1988). The relationship between alexithymia and depressive symptoms in a sample of newly abstinent alcoholic inpatients. Psychotherapy and Psychosomatics 49, 37–40
Haviland, M.G., Hendry, M.S., Shaw, D.G. & Henry J.P. (1994). Alexithymia in women and men hospitalized for psychoactive substance dependence. Comprehensive Psychiatry, 35, 124-128.
Haviland, M.G., Warren, W.L., Riggs, M.L. & Gallacher, M. (2001). Psychometric properties of the Observer Alexithymia Scale in a clinical sample. Journal of Personality Assessment 77, 176–186.
Holahan, C. J., Moos, R. H., Holahan, C. K., Cronkite, R. C., & Randall, P. K. (2001). Drinking to cope, emotional distress and alcohol use and abuse: A ten-year model. Journal of Studies on Alcohol, 62, 190–198.
Honkalampi, K., Koivumaa-Honkanen, H., Tanskanen, A., Hintikka, J., Lehtonen, J. & Viinamaki, H. (2001). Why do alexithymic features appear to be stable? A 12-month follow-up study of a general population. Psychotherapy and Psychosomatics, 70, 247-253.
Iancu, I., Cohen, E., Ben Yehuda, Y. & Kotler, M. (2006). Treatment of eating disorders improves eating symptoms but not alexithymia and dissociation proneness. Comprehensive Psychiatry 47, 189–193.
Jorgensen, M.M., Zachariae, R., Skytthe, A. & Kyvik, K. (2007). Genetic and environmental factors in alexithymia: A population-based study of 8,785 Danish Twin pairs. Psychotherapy and Psychosomatics, 7, 369-75.
Junghanns, K., Tietz, U., Dibbelt, L., Kuether, M., Jurth, R., Ehrenthal, D., Blank, S. & Backhaus, J. (2005). Attenuated salivary cortisol secretion under cue exposure is associated with early relapse. Alcohol and Alcoholism, 40, 80-85.

Kassel, J. D., Veilleux, J. C., Wardle, M. C., Yates, M. C., Greenstein, J. E., Evatt, D. P., et al. (2007). Negative affect and addiction. In M. al Absi (Ed.), Stress and addiction: Biological and psychological mechanisms. London: Academic Press.

Keller, D.S., Carroll, K.M., Nich, C. & Rounsaville, B.J. (1995). Alexithymia in cocaine abusers - response to psychotherapy and pharmacotherapy. American Journal on the Addictions, 4, 234-244.

Kendler, K.S., Myers, J.& Prescott, C.A.(2007). Specificity of genetic and environmental risk factors for symptoms of cannabis, cocaine, alcohol, caffeine, and nicotine dependence. Archives of General Psychiatry, 64(11), 1313-20.

Kendler, K.S., Chen, X., Dick, D., Maes, H., Gillespie, N., Neale, M.C. & Riley, B. (2012). Recent advances in the genetic epidemiology and molecular genetics of substance use disorders. Nature Neuroscience, 15 (2), 181-189.

Keyes, K.M., Hatzenbuehler, M.L. & Hasin, D.S. (2011). Stressful life experiences, alcohol consumption, and alcohol use disorders: the epidemiologic evidence for four main types of stressors. Psychopharmacology (Berl), 218(1),1-17.

Kooiman, C.G., Spinhoven, P. & Trijsburg, R.W.(2002) The assessment of alexithymia - a critical review of the literature and a psychometric study of the toronto alexithymia scale-20. Journal of Psychosomatic Research, 53, 1083-1090.

KPMG Bureau voor Economische Argumentatie. (2001). Kosten en baten van alcoholzorg en -preventie: eindrapport,. Onderzoek in opdracht van het NIGZ en GGZ Nederland Hoofddorp, 2001.

Larsen, J.K., Brand, N., Bermond, B. & Hijman, R. (2003) Cognitive and emotional characteristics of alexithymia - A review of neurobiological studies. Journal of Psychosomatic Research, 54, 533-41.

Leshner, A.I. (1997). Addiction is a Brain Disease, and It Matters. Science, 278, 45-47

Loas, G., Fremaux, D., Otmani, O., Lecercle, C. & Delahousse, J. (1997). Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Comprehensive Psychiatry, 38, 296-299.

Luminet, O., Rokbani, L., Ogez, D. & Jadoulle, V. (2007). An evaluation of the absolute and relative stability of alexithymia in women with breast cancer. Journal of Psychosomatic Research 62, 641–648.

Lumley, M.A., Mader, C., Gramzow, J. & Papineau K. (1996). Family factors related to alexithymia characteristics. Psychosomatic Medicine, 58, 211-6

Lumley, M.A., Neely, L.C. & Burger, A.J. (2007). The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. Journal of Personality Assessment 89, 230-246.

Lyvers, M., Onuoha, R., Thorberg, F.A., & Samios, C. (2012). Alexithymia in relation to parental alcoholism, everyday frontal lobe functioning and alcohol consumption in a non-clinical sample. Addictive Behaviors, 37, 205–210.

Mattila, A.K., Salminen, J.K., Nummi, T. & Joukamaa, M. (2006). Age is strongly associated with alexithymia in the general population. Journal of Psychosomatic Research, 61, 629-635.

McLellan, A.T., Alterman, A. I., Metzger, D.S., Grissom, G.R., Woody, G.E., Luborsky, L. & O'Brien, C.P. (1994). Similarity of outcome predictors across opiate, cocaine, and alcohol treatments – role of treatment services. Journal of Consulting and Clinical Psychology, 62 (6), 1141-1158.

McLellan, A.T., Lewis D.C., O'Brien C.P. & Kleber, H.D. (2000) Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. JAMA 284(13),1689-1695.

Moos, R.H., McCoy, L. & Moos, B.S. (2000). Global Assessment of Functioning (GAF) ratings: Determinants and role as predictors of one-year treatment outcomes. Journal of Consulting and Clinical Psychology, 56 (4), 449-461

Naqvi, N.H.& Bechara, A. (2010). The insula and drug addiction: an interoceptive view of pleasure, urges, and decision-making. Brain Structure & Function, 214 (5-6), 435-450

Office of National Drug Policy. (2004) The Economic Costs of Drug Abuse in the United States: 1992-2002. *Washington, DC: Executive Office of the President* (Publication No. 207303).

Ogrodniczuk, J. S., Piper, W. E., & Joyce, A. S. (2008). Alexithymia and Therapist Reactions to the Patient: Expression of Positive Emotion as a Mediator. Psychiatry-Interpersonal and Biological Processes, 71(3), 257-265

Parker, J. D. A., Keefer, K. V., Taylor, G. J., & Bagby, R. M. (2008). Latent Structure of the Alexithymia Construct: A Taxometric Investigation. Psychological Assessment, *20*(4), 385-396.

Paul, L.K., Brown, W.S., Adolphs, R., Tyszkam J.M., Richards, L.J., Mukherjee, P., et al. (2007) Agenesis of the corpus callosum: genetic, developmental and functional aspects of connectivity. Nature Reviews Neuroscience, 8, 287-99.

Pfefferbaum, A., Lim, K.O., Desmond, J.E. & Sullivan, E.V. (1996) Thinning of the corpus callosum in older alcoholic men: a magnetic resonance imaging study. Alcohol Clinical and Experimental Research, 20, 752-7.

Picardi, A., Fagnani, C., Gigantesco, A., Toccaceli, V., Lega, I. & Stazi, M.A. (2011) Genetic influences on alexithymia and their relationship with depressive symptoms. Journal of Psychosomatic Research, 71, 256–263

Pinard, L., Negrete, J.C., Annable, L. & Audet, N. (1996). Alexithymia in substance abusers - persistence and correlates of variance. The American Journal on Addictions 5, 32–39

Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J.(2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. Lancet, 373(9682):2223-33.

Roberts, B.W. & DelVecchio, W.F. (2000). The rank–order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. Psychology Bulletin, 126, 3–25.

Roberts, B.W., Walton, K.E. & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. Psychology Bulletin, 132, 1–25.

Roebuck, T.M., Mattson, S.N. & Riley, E.P. (1998). A review of the neuroanatomical findings in children with fetal alcohol syndrome or prenatal exposure to alcohol. Alcoholism-Clinical and Experimental Research, 22, 339-44.

Rohlfing, T., Sullivan, E.V. & Pfefferbaum, A. (2006) Deformation-based brain morphometry to track the course of alcoholism: differences between intra-subject and inter-subject analysis. Psychiatry Research, 146, 157-70.

Romei, V., De Gennaro, L., Fratello, F., Curcio, G., Ferrara, M., Pascual-Leone, A., et al. (2008) Interhemispheric transfer deficit in alexithymia: A transcranial magnetic stimulation study. Psychotherapy and Psychosomatics, 77, 175-81.

Rosenblum, A., Cleland, C., Magura, S., Mahmood, D., Kosanke, N. & Foote, J. (2005). Moderators of effects of motivational enhancements to cognitive behavioral therapy. The American Journal of Drug and Alcohol Abuse, 31, 35–58.

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112.

Rounsaville, B.J., Dolinsky, Z.S., Babor, T.F. & Meyer, R.E. (1987). Psychopathology as a predictor of treatment outcome in alcoholics. Archives of General Psychiatry, 44 (6), 505-513

Rufer, M., Hand, I., Braatz, A., Alsleben, H., Fricke, S. & Peter, H. (2004). A prospective study of alexithymia in obsessive–compulsive patients treated with multimodal cognitive-behavioral therapy. Psychotherapy and Psychosomatics, 73, 101–106.

Rybakowski, J., & Ziolkowski, M. (1991). Clinical and biochemical heterogeneity of alcoholism: The role of family history and alexithymia. Drug and Alcohol Dependency, 27, 73-7.

Saarijarvi, S., Salminen, J.K. & Toikka, T. (2006). Temporal stability of alexithymia over a five-year period in outpatients with major depression. Psychotherapy and Psychosomatics, 75, 107–112.

Salminen, J.K., Saarijarvi, S., Aarela, E., Toikka, T. & Kauhanen, J. (1999). Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland. Journal of Psychosomatic Research, 46, 75-82.

Schellekens, A.F. et al. (2012). COMT VAL158Met modulates the effect of childhood adverse experiences on the risk of alcohol dependence. Addiction Biology [Epub ahead of print]

Schuckit, M.A. (2009). An overview of genetic influences in alcoholism. Journal of Substance Abuse Treatment, 36(1), S5-14

Sher, K.J., Bartholow, B.D. & Wood, M.D. (2000). Personality and substance use disorders: a prospective study. Journal of Clinical and Consulting Psychology, 68 (5), 818-829

Sifneos, PE. (1973). The prevalence of 'alexithymic' characteristics in psychosomatic patients. Psychotherapy and Psychosomatics, 22, 255-62.

Spitzer, C., Siebel-Jurges, U., Barnow, S., Grabe, H. J., & Freyberger, H. J. (2005). Alexithymia and interpersonal problems. Psychotherapy and Psychosomatics, 74(4), 240-246.

Stingl, M., Bausch, S., Walter, B., Kagerer, S., Leichsenring, F. & Leweke, F. (2008). Effects of inpatient psychotherapy on the stability of alexithymia characteristics. Journal of Psychosomatic Research 65, 173–180.

Substance Abuse and Mental Health Services Administration (SAMHSA) (2007).Results from the 2006 National Survey on Drug Use and Health: National Findings. (Office of Applied Studies, NSDUHSeries H-32, DHHS Publication No. SMA 07-4293)

Substance Abuse and Mental Health Services Administration (SAMHSA) (2011), Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011.

Swayze, V.W., Johnson, V.P., Hanson, J.W., Piven, J., Sato, Y., Giedd, J.N., et al. (1997) Magnetic resonance imaging of brain anomalies in fetal alcohol syndrome. Pediatrics, 99, 232-40.

Taylor, GJ, Bagby, R. M., Parker, J. D. A., & (1997). Disorders of affect regulation. Cambridge (UK): Cambridge university press.

Taylor, G.J. & Bagby, R.M. (2004). New trends in alexithymia research. Psychotherapy and Psychosomatics, 73, 68-77.

Thorberg, F.A., Young, R.M., Sullivan, K.A. & Lyvers, M. (2009). Alexithymia and alcohol use disorders: A critical review. Addictive Behaviors, 34, 237-245.

Thorberg, F.A., Young, R.Mc.D., Sullivan, K.A. & Lyvers M. (2011). Parental bonding and alexithymia: A meta-analysis. European Psychiatry, 26,187–193

Tolmunen, T., Heliste, M., Lehto, S.M., Hintikka, J., Honkalampi, K. & Kauhanen J. (2011). Stability of alexithymia in the general population: an 11-year follow-up. Comprehensive psychiatry, 52(5), 536-41

Vanheule, S., Desmet, M., Meganck, R., & Bogaerts, S. (2007). Alexithymia and interpersonal problems. Journal of Clinical Psychology, 63(1), 109-117.

Vanheule, S., Vandenbergen, J., Verhaeghe, P., & Desmet, M. (2010). Interpersonal Problems in Alexithymia: A Study in Three Primary Care Groups. Psychology and Psychotherapy: Theory, Research and Practice, 83, 351–362.

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112.

Venkatasubramanian, G., Anthony, G., Reddy, U.S., Reddy, V.V., Jayakumar, P.N. & Benegal, V. (2007). Corpus callosum abnormalities associated with greater externalizing behaviors in subjects at high risk for alcohol dependence. Psychiatry Research,156, 209-15.

Volkow, N.& Li, T.K. (2005). The neuroscience of addiction. Nature Neuroscience, 8 (11), 1429-1430.

Vorst, H.C.M., Bermond, B., 2001. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. Personality and Individual Differences 30, 413–43

World Health Organization (WHO), 2002. The world health report 2002 – Reducing risks, promoting healthy life. Geneva, Switzerland

Ziolkowski, M., Gruss, T. & Rybakowski, J.K. (1995). Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence. Psychotherapy and Psychosomatics, 63, 169-173.

Chapter 2a

Cognitive Behavioural Treatment is as effective in high- as in low-scoring Alexithymic Patients with Substance-Related Disorders**

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Abstract

Background: About 40% of all patients with substance use disorders (SUD) are considered to be alexithymic. It is hypothesized that alexithymia is negatively associated with outcome results.

Methods: 187 SUD inpatients were assessed at baseline and 3-month follow-up with the Dutch version of the TAS-20 and EuropASI after an inpatient cognitive behavioural therapy (CBT) as usual (TAU-group) or CBT with a SDM (Shared Decision Making) intervention (SDM-group).

Results: Thirty-seven percent of the patients were alexithymic (TAS-20 ≥ 61). Baseline alexithymics showed higher severity-scores on the EuropASI "work, education and income" [$t(129) = 2.1$, $p = 0.04$] and psychiatric severity [$t(129) = 5.2$, $p < 0.001$] domains. Alexithymia did not predict abstinence at follow-up. Alexithymic male patients improved more on the domains "work, income and education" [$t(79) = 2.7$, $p < 0.01$] than non-alexithymic men. Alexithymic patients in the TAU-group improved more on the domains "drugs" [$t(55) = 2.2$, $p = 0.04$] and "family and social relations" [$t(55) = 2.2$, $p = 0.03$] than non-alexithymics.

***Conclusion*:** Alexithymic SUD patients at baseline showed more addiction related problems. Baseline alexithymia was predominantly positively associated with outcome results. Alexithymic SUD-patients profit very well from structured CBT-interventions. Based on these results assessing alexithymia in SUD-patients at baseline for treatment adjustments in CBT is not necessary.

Introduction

Alexithymia refers to the difficulty in identifying and describing feelings, the inability to discriminate between feelings and physical sensations, having a limited fantasy life and the inclination to an externally oriented way of thinking [1, 2].The prevalence of alexithymia in population-based studies varies between 8% and 15% with most studies showing a slightly higher prevalence in men than in women[3]. Alexithymia has been associated with increasing age, low educational level, poor perceived health, and depression[4, 5]. In substance related disorders alexithymia rates till 67% have been reported[6, 7]. In 2004 van Rossum et al.[8] reported 54% of the patients with alcohol related disorders to be alexithymic with a mean score of 56 on the TAS-20. The patients were recruited in 4 of our inpatient detoxification units in the East and South part of the Netherlands.

In a mixed population of psychoactive substance dependent patients state-anxiety, depression and alexithymia were related. Women's average alexithymia scores were higher than for men [9]. Regarding alexithymia only the total TAS-20 and the subscale "difficulty identifying feelings" (DIF) showed significant differences between men and women.

In several studies alexithymic features have shown an enhanced risk for a broad spectre of somatic and psychiatric disorders, especially somatoform, mood, anxiety (PTSD), eating and substance-related disorders[10, 11]. Yet the evidence regarding the association between alexithymia, alcohol consumption and severity of alcohol dependence is still limited as is the support for alexithymia as a direct risk factor for alcohol related disorders [7, 10, 12-15]. Associations were found in a cross-sectional Egyptian study between alexithymia and opiate, benzodiazepine and polysubstance use and lower numbers of reported relapses, but also with non-persistence in treatment [16].

Alexithymia is supposed to be a negative prognostic factor for many psychological treatments, especially when aimed at insight, emotional awareness or therapeutic alliance. But when dealing with highly structured cognitive behavioural interventions alexithymic patients seem to perform as well as or sometimes even better than non-alexithymic patients [17].

Therapy evaluations for alexithymic patients with substance related disorders are scarce. Rosenblum et al.[18] demonstrated less substance abuse in high alexithymic SUD patients as a result of group cognitive behaviour therapy (CBT) compared to a group of motivational intervention (GMI). The other way around, low alexithymics did better on GMI. But for the total study population alexithymia was related to less treatment sessions attended and to a larger follow-up ASI alcohol composite score[10]. Outpatient cocaine abusing alexithymic patients showed better outcomes when treated with clinical management over cognitive-behavioural relapse prevention[19]. There is limited empirical evidence for an influence of alexithymia on attrition rates in the treatment of alcohol related disorders [7, 10].

Despite limited indications that alexithymic SUD patients can profit from CBT we still have our concerns about the suitability of the regular CBT programs, in which alexithymic patients are asked many times a day to describe their feelings and cravings.

This study examines a) the prevalence of alexithymia in SUD-patients after detoxification, b) the difference in addiction severity between alexithymic and non-alexithymic SUD patients and c) the predictive value of alexithymia at baseline on recovery as the result of an inpatient cognitive behavioural therapy program for SUD-patients. Outcome results for recovery were dropping-out, time in treatment, abstinence at follow-up and improvement in EuropASI scores between baseline and follow-up. We hypothesized that alexithymic SUD-patients showed a larger score on addiction severity at baseline and would profit less from cognitive behavioural treatment than non-alexithymic patients, because the program is not designed for alexithymic patients: alexithymic patients are accounted for capabilities they do not have, such as showing and working on emotions and cravings.

Methods

Subjects

Subjects were 220 inpatients recruited from three addiction treatment centres in the East and South part of the Netherlands: GGZ Noord- & Midden-Limburg, department Addiction Treatment, Novadic-Kentron and Tactus Addiction Treatment. This study was part of a randomized controlled trial investigating a Shared Decision Making Intervention (SDMI) in addiction health care that was carried out between January 2005 to December 2006 and published in 2009[20, 21]. Compared with a well established 3-month inpatient treatment program alone, addition of SDMI showed significant benefits on drug use and psychiatric problems.

All 261 inpatients hospitalized during the study period were assessed for eligibility. No distinction was made for the kind of substance(s) used. Due to exclusion criteria (being under the age of 18, insufficient knowledge of the Dutch language, severe psychiatric co-morbidity precluding to take part in the SDM-intervention or no signed informed consent), refusing or early leaving 227 patients were randomized. Because 7 patients refused to participate later on and 8 patients could not start because of an untimely stop at one location, 107 patients started the SDM-intervention and 105 patients started in the control group: decision making as usual, i.e. treatment as usual (TAU). All patients have been diagnosed according to DSM-IV-TR as having one or more substance related disorders.

At follow-up evaluation, three months after discharge from inpatient treatment, patients received a voucher for EUR 20. The study was approved by the Dutch Ethical Assessment Committee for Experimental Investigations on People (No. 4.108).

Interventions

The participating treatment units had a comparable 3-month inpatient cognitive behavioural approach with elements of motivational interviewing (MI), relapse prevention, social skills training and both individual and group components. SDM is a structured approach to reach a treatment agreement during 5 sessions and is also partly based on MI-techniques[22].

In the Netherlands MI is widely known and used to motivate patients with substance use disorders to start and stay in treatment. So, therapists in the control (TAU) group, mostly nurses or social workers as in the SDM intervention, also use MI but not in a structured way. In the SDM group MI was applied by protocol to explore, compare and evaluate indicated treatment goals. In this condition both therapists and patients completed the Goals of Treatment Questionnaire, based on the Camberwell Assessment of Needs (CAN)[23, 24]. In the control intervention all participating centres used comparable, unstructured, procedures to reach treatment agreement with patients. For a detailed explanation of the SDM intervention is referred to Joosten et al.[21].

Instruments

Alexithymia was assessed at baseline and 3-month follow-up with the Dutch version of the TAS-20[25, 26] comprising three dimensions: (1) difficulty in identifying feelings (DIF), (2) difficulty in describing feelings (DDF) and (3) externally oriented thinking (EOT). Each item consists of a five-point Likert scale ranging from "completely disagree" to "completely agree". The TAS-20 can be analyzed in its entirety or the three components can be analyzed separately. The TAS-20 total scores were categorized according to the empirically derived cut-off points suggested by Taylor et al.[27]: a total score of 61 and above indicates alexithymia, and scores of 51 and below indicate no alexithymia. A score from 52 to 60 represents a mild degree of alexithymia.

Type of substance use disorder was assessed by using the Composite International Diagnostic Interview, Substance Abuse Module (CIDI-SAM) at baseline[28]. The CIDI-SAM is an expanded and more detailed version of the substance use sections of the CIDI. The interview questions address the diagnostic criteria of DSM-IV-TR and ICD-10 psychoactive substance use disorders. Severity of substance use was established on the basis of the European Addiction Severity Index (EuropASI) at baseline and 3-month follow-up[29, 30]. The EuropASI is a clinical research interview designed to assess problem severity in 7 areas of functioning: physical health, employment, alcohol and/or drug use, legal, family/social and psychiatric. The Dutch version of EuropASI used in the present study also includes gambling. Eight severity scores that could range from 0 (no problem) to 9 (extremely serious problem) were derived from this interview. Data used in this part of the study were collected at baseline and at three-month follow-up. Independent interviewers carried out the 3-month follow-up measurements.

Statistical analysis

The prevalence of alexithymia is presented in percentages. For the comparison of the baseline characteristics (table 1), time in treatment, dropping-out of alexithymic (TAS-20 > 60) and non-alexithymic patients (TAS-20 < 52) Chi-square or Fisher's exact tests were used for dichotomous data and independent t-tests for continuous data.

"Change scores" of the EuropASI severity scores were computed by subtracting the follow-up scores from the baseline scores of the 8 domains of the EuropASI. Independent t-tests were used to show differences in means for EuropASI "change scores" on domain level between baseline alexithymics and non-alexithymics. To estimate the effect size of the changes in the EuropASI severity scores, Cohen's *d* $(\mu 1 - \mu 2) / \sigma 1$ was calculated between baseline and follow-up. Cohen defines *d* of 0.2, 0.5 and 0.8 as small, medium and large effects, respectively.

Multivariate logistic and linear regression models were performed with abstinence and the EuropASI "change scores", respectively, as the dependent variables. The predictor variables were age, gender, intervention type (SDM or TAU), based on previous research[4, 9, 18, 21], and the total baseline (TAS-20) alexithymia score. Variables with a $p<0.15$ in univariate analyses, were entered in a full multivariate model. Subsequently, non-significant variables were removed, one by one, until -2 log likelihood deteriorated significantly (logistic regression) or R-squared changed by more than 10% (linear regression). Based on previous research effect modification by gender and type of intervention was expected in the relationship between alexithymia and abstinence, respectively EuropASI "change scores. Therefore, interaction terms for alexithymia*gender and alexithymia*intervention were brought into the models to formally test for significant interaction. However, regardless of significance, stratified analyses were also performed. We included all patients with a baseline alexithymia assessment.

Finally, all statistical tests were 2-sided, with a p value ≤ 0.05 considered to be significant, and performed using SPSS for Windows (release 16.0).

Table 1. *Baseline characteristics of the study population by alexithymia*

Patient characteristics	High alexithymic (TAS-20 > 60) n = 69(36.9%)	Low alexithymic (TAS-20 < 52) n = 62(33.2%)	p
Gender % (n)			0.34
Male	40.0(56)	32.9(46)	
Female	27.7(13)	34.0(16)	
Condition % (n)			0.95
SDM	52.4(33)	47.6(30)	
TAU	52.9(36)	47.1(32)	
Age (years) Mean(SD)	39.6(10.6)	42.1(10.3)	0.16
Country of birth % (n)			0.23
Netherlands	54.1(66)	45.9(56)	
Other	33.3(3)	66.7(6)	
Relationship % (n)			0.87
Married	50.0(11)	50.0(11)	
Divorced/widowed	53.1(26)	46.9(23)	
Never married	56.1(32)	43.9(25)	
Employment % (n)			0.05
Employed	46.3(31)	53.7(36)	
Unemployed	62.8(37)	36.2(21)	
Education (years) Mean(SD)	11.0(2.8)	12.0(3.0)	0.05
Type of substance dependence %			0.72
Only alcohol dependent	47.8(32)	52.2(35)	
Only drug dependent	51.9(14)	48.1(13)	
Years alcohol use > 5 U Mean(SD)	14.0(11.1)	10.8(10.8)	0.10
Years drug use Mean(SD)	8.6(6.6)	8.1(7.5)	0.75
Substance of preference % (n)			0.40
Alcohol	46.9(30)	53.1(34)	
Cocaine/stimulants	56.2(9)	43.8.(7)	
Cannabis	25.0(1)	75.0(3)	
Poly substance	61.9(26)	38.1(16)	
Other	33.3(1)	67.7(3)	
EuropASI-scores Mean(SD)			
Physical health	2.9(2.0)	2.7(2.2)	0.67
Work, education and income	4.0(1.8)	3.3(1.9)	0.04
Alcohol	5.4(2.4)	5.0(2.6)	0.38
Drugs	3.9(3.2)	3.0(3.3)	0.10
Legal	1.6(2.0)	1.3(1.8)	0.27
Family/social relations	4.5(1.3)	4.0(1.6)	0.07
Psychiatric	6.8(1.2)	5.1(2.4)	<0.001
Gambling	0.4(1.2)	0.2(0.7)	0.43

Notes: SDM = Shared Decision Making; TAU = Treatment As Usual

Results

Prevalence of alexithymia

TAS-20 baseline data were available for 187 patients. According to the cut-off score 36.9% (n = 69) was alexithymic, 29,9% (n = 56) had an intermediate or moderate position and 33.2% (n = 62) scored beneath the cut-off point and did not meet the criteria for alexithymia. The mean score of the TAS-20 on baseline was 55.7 (SD = 11.3) The mean scores of the factors DIF, DDF and EOT were respectively 19.1 (SD = 6.4), 16.2 (SD = 4.3) and 20.3 (SD = 4.2).

Baseline differences between (high) alexithymic and non-alexithymic patients

Table 1 shows the baseline characteristics for the alexithymic (TAS-20 ≥ 61) and the non-alexithymic (TAS-20 ≤ 51) patients. Alexithymic patients had less years of education and were more often unemployed than non-alexithymics. On the EuropASI alexithymics showed more problems on the "work, income and education" and the "psychiatry" scales.

Predictive value of baseline alexithymia on recovery

Follow-up data

The outcome results at 3-month follow-up were based on 166 (78%) of the 212 participating patients. Hundred fifty and two (81.3%) of the 187 patients with baseline alexithymia scores participated at the follow-up interviews, but from 16 of these patients follow-up data for abstinence were missing. The availability of follow-up data did not differ between baseline alexithymics (78.3%; n = 54) and non-alexithymics (83.9%; n =52) (χ^2 (1) = 0.67, p = 0.42).

Time in treatment

The mean time in treatment (days) for alexithymic patients (M = 116.0, SD = 58.9) was not different from patients without alexithymia (M = 105.1, SD = 48.6) [t(129) = 1.14, p = 0.26].

Drop-out

Completers versus drop-outs did not differ between alexithymics (50,7% completers) and non-alexithymics (43,5% completers) [χ^2 (1) = 0.68, p = 0.41].

Abstinence

Fifty-four percent (54.0%) of the baseline alexithymics were abstinent at follow-up and 45.7% of the non-alexithymics [χ^2 (1) = 0.67, p = 0.41]. At univariate analysis none of the predictor variables (age, gender, condition, TAS-20 and factors) showed significance at a p-value < 0.15 (table 2), so logistic regression models were not performed. Baseline alexithymia or factors (DIF, DDF and EOT) did not predict abstinence at follow-up.

Table 2. *Characteristics of abstinent versus non-abstinent patients at follow-up: independent t- tests for continuous variables and χ^2-tests for dichotomous variables.*

	Abstinent (n = 67)	Non-abstinent (n = 69)	Difference score (95% CI-interval)	p
TAS-20: Mean(SD)	55.4(10.1)	55.3(12.8)	-0.0(- 4.0 – 3.9)	0.98
DDF: Mean(SD)	16.3(4.1)	16.0(4.6)	-0.3(- 1.8 – 1.1)	0.65
EOT: Mean(SD)	20.2(4.3)	20.4(4.2)	0.2(- 1.3 – 1.6)	0.84
Age: Mean(SD)	42.0(10.0)	41.4(12.4)	- 0.6(- 4.4 – 3.2)	0.76
Gender: % (n)				0.30
Male	52.0(51)	48.0(47)		
Female	42.1(16)	57.9(22)		
Condition: % (n)				0.62
SDM	51.6(32)	48.4(30)		
TAU	47.3(35)	52.7(39)		

Notes: FU = Follow-up; TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking". SDM = Shared Decision Making; TAU = Treatment As Usual.

Changes in EuropASI domains

The effect sizes for the changes in EuropASI severity scores varied from small (Cohen's d of alexithymic patients for gambling = 0.11) to large (Cohen's d of alexithymic patients for psychiatric severity = 2.55). Effect sizes were predominantly larger for alexithymic than for non-alexithymic patients. However, independent t-tests between baseline alexithymic and non-alexithymic patients on the "change scores" of the EuropASI showed only significant differences for men in the "work, income and education" and for the TAU-group in the "family and social relations" and "psychiatry" sections (table 3).

Changes in "physical health", "drugs", "family and social relations" and "psychiatry" domains

Based on an a priori expected interaction between alexithymia and type of intervention, stratified analyses for type of intervention were performed. SDM showed on the "physical health" domain better outcomes for higher scores on alexithymia (p = 0.06) and treatment as usual (TAU) was negatively associated with alexithymia. In the TAU group men did better than women. Alexithymia explained 7% of change in R^2 (table 4a). Exploring the alexithymia factors that contributed to the change, we found the DDF factor to be responsible for the change of "physical health" in the SDM condition and EOT in the TAU condition (table 4b). On the "drugs" domain none of the variables in the SDM group delivered a relevant contribution. In the TAU group age was negatively related to improvement. Alexithymia was positively related and explained 5% of the variance (table 4a). On factor level EOT accomplished the improvement (table 4b). Also for the changes on the "family and social relations" and "psychiatry" domains no significant predictor could be found in the SDM intervention. Improvement in the "family/social relations" domain in TAU was only related to baseline alexithymia (table 4a). When converting the total alexithymia score in

the factor scores, the EOT factor was responsible (table 4b). On the change in the "psychiatry" domain alexithymia contributed in the TAU group significantly to the variance besides gender (table 4a). DIF was the responsible factor (table 4b).

Table 3. *EuropASI severity "change scores" (baseline minus follow-up) for baseline high alexithymic and low alexithymic patients; independent t-tests with Cohen's d for change between baseline and follow-up for high alexithymics(A+) and low alexithymics(A-). Stratified analyses for type of intervention or gender are shown when interaction effects with alexithymia are present.*

Addiction severity Mean (SD)	**Alexithymics** (n = 54)	**Non-alexithymics** (n = 52)	**p**	**d(A+)**	**d(A-)**
Physical health					
SDM	1.1(1.7)	0.6(1.9)	0.33	0.52	0.30
TAU	0.6(1.7)	1.5(2.3)	0.10	0.29	0.66
Work, education and income					
Men	1.4(2.2)	0.2(1.8)	0.009	0.75	0.10
Women	1.4(1.4)	0.9(2.1)	0.56	1.11	0.62
Alcohol	2.1(2.3)	1.7(2.2)	0.33	0.91	0.66
Drugs					
SDM	1.9(2.3)	2.0(2.4)	0.86	0.57	0.58
TAU	1.4(1.9)	0.5(1.1)	0.04	0.41	0.15
Legal	1.0(1.4)	0.9(1.6)	0.79	0.55	0.50
Family / social relations					
SDM	2.3(2.3)	1.8(2.5)	0.48	1.68	1.01
TAU	2.4(2.1)	1.1(2.2)	0.03	1.66	0.73
Psychiatric					
SDM	3.1(2.5)	3.1(2.7)	0.99	2.55	1.54
TAU	2.3(2.5)	1.1(2.6)	0.07	2.34	0.46
Gambling	0.1(0.7)	0.2(0.8)	0.57	0.11	0.29

Note: SDM = Shared Decision Making; TAU = Treatment As Usual.

***Table 4a**. Multivariate linear regression analyses predicting change in EuropASI domains "physical health", "drugs", "family and social relations", and "psychiatry" from baseline to follow-up from gender, age and baseline total TAS-20, stratified by intervention type. Non-significant variables were removed until R-squared changed by more than10%.*

	β	p	R^2	Fchange	p
"physical health"					
SDM (n = 69)					
TAS-20 at baseline	.23	0.06	.05	3.76	0.06
TAU (n = 83)					
Gender	-.21	0.05	.12	5.32	0.007
TAS-20 at baseline	-.27	0.01			
"drugs"					
TAU					
Age	-.21	0.06	.10	4.36	0.02
TAS-20 at baseline	.22	0.04			
"family and social relations"					
TAU					
TAS-20 at baseline	.26	0.02	.07	5.79	0.02
"psychiatry"					
TAU					
TAS-20 at baseline	.24	0.03	.06	4.69	0.03

Notes: SDM = "Shared Decision Making"; TAU = "Therapy As Usual".

Table 4b. *Multivariate linear regression analyses predicting change in EuropASI domains "physical health", "drugs", "family and social relations" and "psychiatry" from baseline to follow-up from gender, age,baseline total TAS-20 factor scores, stratified by intervention type. Non-significant variables were removed until R-squared changed by more than 10%.*

	β	p	R^2	Fchange	p
"physical health"					
SDM (n = 69)					
DDF at baseline	.23	0.06	.05	3.73	0.06
TAU (n = 83)					
Gender	-.26	0.02	.12	5.35	0.007
EOT at baseline	-.28	0.01			
"drugs"					
TAU					
Age	-.21	0.05	.11	4.90	0.01
EOT at baseline	.24	0.03			
"family and social relations"					
TAU					
EOT at baseline	.24	0.03	.06	4.98	0.03
"psychiatry"					
TAU					
DIF at baseline	.27	0.01	.08	6.44	0.01

Notes: DIF = "Difficulty Identifying Feelings" ;DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"; SDM = "Shared Decision Making"; TAU = "Therapy As Usual".

Change in the "work, income and education" domain

Based on an a priori expected interaction between alexithymia and gender a stratified analysis was performed. For women baseline alexithymia had no explanatory power in the change scores beyond age and type of intervention. Age and SDM as treatment intervention predicted both better change scores for women. On the contrary age and condition had no part in the change scores for men, but baseline alexithymia did, although for a small part ($R^2 = 0.03$). By importing the alexithymia factors in stead of the total alexithymia score only the DIF factor contributed to the model (table 5).

Table 5. *Multivariatel linear regression analysis predicting change in EuropASI "work, income and education" domain from baseline to follow-up from age, type of intervention and baseline total TAS-20 and factor scores, stratified by gender. Non-significant variables are removed until R-squared changed by more than 10%.*

	β	p	R^2	Fchange	p
Men (n =113)					
TAS-20 at baseline	.18	0.05	.03	3.82	0.05
DIF at baseline	.20	0.03	.04	4.66	0.03
Women (n = 39)					
Age	.25	0.12	.17	3.69	0.04
Intervention	.28	0.08			

Changes in the "alcohol", "legal" and "gambling" domains

The change in the "alcohol" severity score ($R^2 = .08$; Fchange = 6.03, $p = 0.003$) was predicted by age ($\beta = .23$, $p = 0.004$) and type of intervention ($\beta = .13$, $p = 0.09$). Higher age and SDM in comparison with TAU predicted better change scores. On the "legal" domain ($R^2 = .15$; Fchange = 12.87, $p < 0.001$) age ($\beta = -.30$, $p < 0.001$) and female gender ($\beta = -.21$, $p = 0.006$) were both negatively related to improvement. No significant predictors for the change in the "gambling" domain were found. Baseline alexithymia did not reach significance in these 3 domains.

Discussion

We replicated, conform previous studies[6-9], a relative high prevalence (37%) of alexithymia in our detoxified inpatient SUD-population. Our baseline data showed limited evidence regarding the association between alexithymia and severity of SUD, in line with the review of Thorberg et al. for alcohol dependence[7]. The lower scores for alexithymic patients on work, income and education are in accordance with population-based studies[4, 5]. In recent detoxified SUD-patients symptoms of depression and anxiety are relatively high and because of the strong relation between these symptoms and alexithymia, a part of the high baseline alexithymia score could be interpreted as a state phenomenon[9, 31]. The psychiatric severity rating scale of the Dutch ASI is moderately correlated with the Beck Depression Inventory (BDI) and the SCL-90 mean score[30],

so higher scores of our baseline alexithymics on the psychiatry scale partly represent these anxiety and depression symptoms.

Thus our first hypothesis that alexithymic SUD patients show a higher rate of addiction severity has partly been confirmed, although the relationship did not concern direct addiction measures, but substance use related aspects.

Against expectations alexithymia did not have a negative influence on abstinence at follow-up, time in treatment and dropping-out. These outcomes are contrary to previous research [12, 13].

We also expected worse therapeutic outcome results for alexithymic SUD-patients on the EuropASI change scores in comparison with non-alexithymic patients. But overall, alexithymics did just as well as non-alexithymics or even better. Male alexithymic patients managed to improve their social circumstances (EuropASI "work, education and income" domain) better than non-alexithymic male patients. But these social circumstances were at baseline worse for alexithymic patients, so there was more to improve for them. Only the DIF-factor in alexithymia was related to the improvement. DIF is also the factor that is most sensitive for change in mood and anxiety [31]. Reducing depression and anxiety, as was the case owing to the improvement of the EuropASI "psychiatry" domain, could have stimulated patients to improve social circumstances and therefore be an explanation for the relation between the DIF-factor and the improvement of the "work, income and education" domain. In line with this argument, the changes in the EuropASI domains "work, education and income" and "psychiatry" were also related ($r = .30$; $p < 0.001$). Not only male but also female alexithymic patients improved more on this domain than non-alexithymic women. This improvement was relatively less because non-alexithymic female patients showed a larger improvement than male non-alexithymic patients. In addition older age and participating in the SDM-group were for women related to a better outcome on this domain.

Alexithymic patients in the TAU-group improved also better than non-alexithymics on the "drugs" and "family and social relations" domains. This difference was not found in the SDM-group, but alexithymics and non-alexithymics improved both very well on these domains. Again the baseline scores in both domains were larger for the alexithymic patients. Externally oriented thinking (EOT) was the responsible alexithymia factor that predicted the change in these domains. In previous research this factor was not related to improvement in outcome results[10, 32]. The part in the variance that was explained by EOT is relatively small (6% in both domains), so we are curious if this finding could be replicated in future studies.

Looking at the regression analyses we found that alexithymia was also positively related to the change of the "physical health" domain in the SDM-group ($p = 0.06$) and "psychiatry" domain in the TAU-group, but negatively to the change of the "physical health" domain in the TAU-group. Alexithymics did just like non-alexithymics very well in the SDM group regarding the "psychiatry" domain. On factor level DDF and EOT were involved in the change in the "physical health"

domain and DIF in the "psychiatry" domain, but only small parts (5% - 8%) of the variances were explained by these factors. A shared decision making intervention makes it easier for patients with difficulty in describing feelings (DDF) to improve their physical complaints. However an externally oriented way of thinking (EOT) in SUD-patients makes it in regular CBT more difficult to improve physical health problems. The relation between the DIF factor and the change in the "psychiatry" domain, including aspects of anxiety and depression, is in line with previous remarks on this subject[31]. Older age and participating in the SDM intervention, but not alexithymia predicted a worse outcome of the "alcohol" change score, unlike the results of a previously done study[10]. Alexithymia was also not related to the changes in the "legal" and "gambling" domains.

In contrast to our expectations, alexithymics performed just as well or even better than non-alexithymics on outcome results and therefore our second hypothesis was not confirmed.

In accordance with the findings of Rosenblum et al.[18] we also found that alexithymia can be a moderator in a more motivational enhancement like intervention (SDM) in comparison with a cognitive behavioural treatment as usual (TAU) intervention. But in our study alexithymia was not negatively associated with SDM. Alexithymics did just as good as or even better in the SDM group than in the TAU group. In our study SDM was a very structured add-on intervention, unlike the motivational enhancement versus the cognitive behavioural intervention in Rosenblum's et al. study. Perhaps our TAU had more unstructured motivational interventions in comparison with the intervention of Rosenblum et al. In addition our alexithymic patients could have experienced more support from the structural part of the SDM intervention than from the motivational enhancement therapy in the Rosenblum et al. study. This is in line with the findings of Lumley et al.[17] that interventions that are externally focused or are structured may be better suited for alexithymic patients.

Gender and age played ambivalent roles as predictors in the change of the EuropASI domains. In the TAU-group men performed better on the "physical health" domain and there was a trend for women to perform better on the "psychiatry" domain. For men there was more change in the "legal" domain, but their baseline score was much higher than for women (Mmen = 1.8, SD = 2.0; Mwomen = 0.7, SD = 1.1; $p < 0.001$). Age was positively related with the change in alcohol severity and only for women with the change in the "work, education and income" domain, but negatively with the change in the legal section and for the TAU-group with the change in severity of the drugs domain.

Lumley et al. [17] and others [33-37] showed that in general alexithymia is related to negative treatment outcomes, but sometimes alexithymia did not interfere with the outcome results [38, 39] and in 3 studies alexithymia was associated to some positive results [17]. One of the latter is the study of Rosenblum et al [18], so our results confirm that alexithymic SUD patients can profit from a structured cognitive behaviour therapy and even more when structured motivational aspects in the form of shared decision making are added.

Limitations of our study were the absence of systematic urine or blood samples to confirm abstinence and not measuring depression and anxiety with better equipped instruments. The TAS-20, although the most commonly used measure of alexithymia, could be criticized for being a self-report scale. Many researchers have questioned if a self-report instrument can adequately assess deficits that alexithymics may not be aware of [26, 40]. To overcome this problem it is advised to perform multimethod alexithymia assessment with an observer scale included [6]. SUD patients could have the wrong self-image. They can believe to be more alexithymic, but do not always have to perform in that way[41].

We conclude, based on our results, that there is no need to assess alexithymia at baseline. Alexithymic SUD-patients do not profit less from regular cognitive behavioural therapy than non-alexithymic SUD patients. Adding a structured motivational intervention as shared decision making improves outcome results for alexithymic SUD-patients, but predominantly also for non-alexithymic SUD-patients. Thus the predictive value of measuring baseline alexithymia before an inpatient CBT-intervention for SUD-patients is of no clinical or therapeutical importance.

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References

1 Sifneos PE: Affect, emotional conflict, and deficit - an overview: Psychother Psychosom, 1991, 56, pp 116-122.

2 Taylor GJ, Bagby RM: New trends in alexithymia research. Psychother Psychosom 2004;73:68-77.

3 Salminen JK, Saarijarvi S, Aarela E, Toikka T, Kauhanen J: Prevalence of alexithymia and its association with sociodemographic variables in the general population of finland. Journal of Psychosomatic Research 1999;46:75-82.

4 Mattila AK, Salminen JK, Nummi T, Joukamaa M: Age is strongly associated with alexithymia in the general population. Journal of Psychosomatic Research 2006;61:629-635.

5 Franz M, Popp K, Schaefer R, Sitte W, Schneider C, Hardt J, Decker O, Braehler E: Alexithymia in the german general population. Soc Psychiatry Psychiatr Epidemiol 2008;43:54-62.

6 Dorard G, Berthoz S, Haviland MG, Phan O, Corcos M, Bungener C: Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Compr Psychiat 2008;49:585-592.

7 Thorberg FA, Young RM, Sullivan KA, Lyvers M: Alexithymia and alcohol use disorders: A critical review. Addict Behav 2009;34:237-245.

8 van Rossum LGM, Laheij RJF, de Doelder MS, de Jong CAJ, Jansen J: Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Res 2004;129:107-112.

9 Haviland MG, Hendry MS, Shaw DG, Henry JP: Alexithymia in women and men hospitalized for psychoactive substance dependence. Compr Psychiat 1994;35:124-128.

10 Cleland C, Magura S, Foote J, Rosenblum A, Kosanke N: Psychometric properties of the toronto alexithymia scale (tas-20) for substance users. J Psychosomat Res 2005;58:299-306.

11 Taylor GJ: Recent developments in alexithymia theory and research. Canadian Journal of Psychiatry-Revue Canadienne De Psychiatrie 2000;45:134-142.

12 Loas G, Fremaux D, Otmani O, Lecercle C, Delahousse J: Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Compr Psychiat 1997;38:296-299.

13 Ziolkowski M, Gruss T, Rybakowski JK: Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence. Psychother Psychosom 1995;63:169-173.

14 Junghanns K, Tietz U, Dibbelt L, Kuether M, Jurth R, Ehrenthal D, Blank S, Backhaus J: Attenuated salivary cortisol secretion under cue exposure is associated with early relapse. Alcohol and Alcoholism 2005;40:80-85.

15 Al Birt M, Sandor V, Vaida A, Birt ME: Alexithymia, a risk factor in alcohol addiction? A brief research report on romanian population. Journal of Cognitive and Behavioral Psychotherapies 2008;8:217-225.

16 El Rasheed AH: Alexithymia in egyptian substance abusers. Substance Abuse 2001;22-1:11-22.

17 Lumley MA, Neely LC, Burger AJ: The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. J Pers Assess 2007;89:230-246.

18 Rosenblum A, Cleland C, Magura S, Mahmood D, Kosanke N, Foote J: Moderators of effects of motivational enhancements to cognitive behavioral therapy. Am J Drug Alcohol Abuse 2005;31:35-58.

19 Keller DS, Carroll KM, Nich C, Rounsaville BJ: Alexithymia in cocaine abusers - response to psychotherapy and pharmacotherapy. Am J Addict 1995;4:234-244.

20 Joosten EAG, DeFuentes-Merillas L, de Weert GH, Sensky T, van der Staak CPF, de Jong CAJ: Systematic review of the effects of shared decision-making on patient satisfaction, treatment adherence and health status. Psychother Psychosom 2008;77:219-226.

21 Joosten EAG, de Jong CAJ, de Weert-van Oene GH, Sensky T, van der Staak CPF: Shared decision-making reduces drug use and psychiatric severity in substance-dependent patients. Psychother Psychosom 2009;78:245-253.

22 Miller WR: Motivational interviewing: Research, practice, and puzzles. Addictive Behaviors 1996;21:835-842.

23 Phelan M, Slade M, Thornicroft G, Dunn G, Holloway F, Wykes T, Strathdee G, Loftus L, McCrone P, Hayward P: The camberwell assessment of need - the validity and reliability of an instrument to assess the needs of people with severe mental-illness. British Journal of Psychiatry 1995;167:589-595.

24 McCrone P, Leese M, Thornicroft G, Schene AH, Knudsen HC, Vazquez-Barquero JL, Lasalvia A, Padfield S, White IR, Griffiths G: Reliability of the camberwell assessment of need - european version - epsilon study 6. British Journal of Psychiatry 2000;177:S34-S40.
25 Taylor GJ, Bagby RM, Parker JDA: The 20-item toronto alexithymia scale - iv. Reliability and factorial validity in different languages and cultures. Journal of Psychosomatic Research 2003;55:277-283.
26 Kooiman CG, Spinhoven P, Trijsburg RW: The assessment of alexithymia - a critical review of the literature and a psychometric study of the toronto alexithymia scale-20. J Psychosomat Res 2002;53:1083-1090.
27 Taylor GJ, Bagby RM, Parker JDA, : Disorders of affect regulation. Cambridge, Cambridge university press, 1997.
28 Compton WM, Cottler LB, Dorsey KB, Spitznagel EL, Mager DE: Comparing assessments of dsm-iv substance dependence disorders using cidi-sam and scan (vol 41, pg 179, 1996). Drug and Alcohol Dependence 1996;42:217-219.
29 McLellan AT, Luborsky L, Woody GE, Obrien CP: Improved diagnostic evaluation instrument for substance abuse patients - addiction severity index. Journal of Nervous and Mental Disease 1980;168:26-33.
30 Hendriks VM, Kaplan CD, Vanlimbeek J, Geerlings P: The addiction severity index - reliability and validity in a dutch addict population. Journal of Substance Abuse Treatment 1989;6:133-141.
31 de Timary P, Luts A, Hers D, Luminet O: Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. Psychiatry Res 2008;157:105-113.
32 Saarijarvi S, Salminen JK, Toikka T: Temporal stability of alexithymia over a five-year period in outpatients with major depression. Psychother Psychosom 2006;75:107-112.
33 Porcelli P, Bagby RM, Taylor GJ, De Carne M, Leandro G, Todarello O: Alexithymia as predictor of treatment outcome in patients with functional gastrointestinal disorders. Psychosomatic Medicine 2003;65:911-918.
34 McCallum M, Piper WE, Ogrodniczuk JS, Joyce AS: Relationships among psychological mindedness, alexithymia and outcome in four forms of short-term psychotherapy. Psychology and Psychotherapy-Theory Research and Practice 2003;76:133-144.
35 Viinamaki H, Hintikka J, Tanskanen A, Honkalampi K, Antikainen R, Koivumaa-Honkanen H, Haatainen K, Saarinen P: Partial remission in major depression: A two-phase, 12-month prospective study. Nordic Journal of Psychiatry 2002;56:33-37.
36 Bach M, Bach D, Bohmer F, Nutzinger DO: Alexithymia and somatization - relationship to dsm-iii-r diagnoses. Journal of Psychosomatic Research 1994;38:529-538.
37 Grabe HJ, Frommer J, Ankerhold A, Ulrich C, Groeger R, Franke GH, Barnow S, Freyberger HJ, Spitzer C: Alexithymia and outcome in psychotherapy. Psychother Psychosom 2008;77:189-194.
38 Spek V, Nyklicek I, Cuijpers P, Pop V: Alexithymia and cognitive behaviour therapy outcome for subthreshold depression. Acta Psychiatrica Scandinavica 2008;118:164-167.
39 Rufer M, Hand I, Braatz A, Alsleben H, Fricke S, Peter H: A prospective study of alexithymia in obsessive-compulsive patients treated with multimodal cognitive-behavioral therapy. Psychother Psychosom 2004;73:101-106.
40 Grabe HJ, Lobel S, Dittrich D, Bagby RM, Taylor GJ, Quilty LC, Spitzer C, Barnow S, Mathier F, Jenewein J, Freyberger HJ, Rufer M: The german version of the toronto structured interview for alexithymia: Factor structure, reliability, and concurrent validity in a psychiatric patient sample. Compr Psychiat 2009;50:424-430.
41 Lindsay J, Ciarrochi J: Substance abusers report being more alexithymic than others but do not show emotional processing deficits on a performance measure of alexithymia. Addiction Research & Theory 2009;17:315-321.

Chapter 2b

Cognitive behavioural treatment is as effective in high- as in low-scoring alexithymic patients with substance-related disorders**

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Keywords: alexithymia, addiction severity, addiction treatment outcome, abstinence, substance dependence

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Alexithymia is purported to be a negative prognostic factor for many psychological treatments [1]. In substance use disorders (SUD) alexithymia rates of up to 67% have been reported [2-4], but evaluations of therapy in alexithymic SUD patients are scarce. Group cognitive behaviour therapy (CBT) was relative successful in high-scoring alexithymic SUD patients [5], but alexithymia was associated with a lower attrition rate and with a larger Addiction Severity Index (ASI) alcohol composite score at follow-up [6].

From a clinical point of view we were interested in the predictive value of alexithymia at baseline on recovery. We hypothesized a negative relation of alexithymia with outcomes, which would be a strong argument for addressing alexithymia at intake and adjusting therapy for high alexithymic patients.

This study was part of a trial investigating a Shared Decision Making Intervention (SDMI) in addiction health care [7, 8]. The main study indicated that compared with a 3-month inpatient treatment, addition of SDMI was associated with benefits in drug use and psychiatric problems [8].

A total of 187 abstinent SUD inpatients were assessed at baseline with the Dutch version of the Toronto Alexithymia Scale (TAS-20) [9, 10] and the European ASI (EuropASI) at baseline and 3-month follow-up [11, 12] after an inpatient CBT as usual (CBT-TAU-group) or CBT with SDMI (CBT-SDMI-group). The TAS-20 is the most widely used measure of alexithymia [1]. Although predominantly seen as a dimensional construct [13], a total score of 61 and above indicates a high alexithymia score, and scores of 51 and below indicate a low alexithymia score [14]. The EuropASI is a clinical research interview assessing problem severity in: physical health, employment, alcohol and/or drug use, legal, family/social and psychiatric. All patients have been diagnosed according to DSM-IV-TR as having 1 or more substance-related disorders.

In all, 152 (81.3%) of the patients had follow-up interviews. Follow-up data for abstinence from 16 patients were missing. The availability of follow-up data did not differ between baseline high-scoring (78.3%; n = 54) and low-scoring alexithymics (83.9%; n =52) (χ^2 (1) = 0.67, p = 0.42).

The mean score of the TAS-20 at baseline was 55.7 (SD = 11.3). According to the cut-off score 36.9% (n = 69) were highly alexithymic and 33.2% (n = 62) were low-scoring alexithymics. Highly alexithymic patients had fewer years of education [t(129) = 2.0, p = 0.05] and were more often unemployed [χ^2(1) = 3.8, p = 0.05] than low-scoring alexithymics. High-scoring alexithymics showed more problems in the "work, income and education" [t(129) = 2.1, p = 0.04] and "psychiatry" domains [t(129) = 5.2, p < 0.001]. In recently detoxified SUD patients, the incidence of symptoms of depression and anxiety is high and because of their relationship with alexithymia, a part of the high baseline alexithymia score could be interpreted as a state phenomenon [15, 16]. The "psychiatric severity" rating scale of the Dutch EuropASI is correlated with depressive and anxiety symptoms [12], thus the higher scores of highly alexithymic patients in the psychiatry domain reflect these symptoms.

The mean time of treatment (in days) for highly alexithymic patients (M = 116.0, SD = 58.9) was not different from low-scoring alexithymics [M = 105.1, SD = 48.6; t(129) = 1.14, p = 0.26], and also the rate of completers was similar between high- (50,7%) and low-scoring alexithymics [43,5%; χ^2 (1) = 0.68, p = 0.41]. Fifty-four percent of the high-scoring and 45.7% of the low-scoring alexithymics were abstinent at follow-up [χ^2 (1) = 0.67, p = 0.41]. Alexithymia measured as a continuous variable was not related to abstinence [MTas = 55.4 (SD = 10.1) for abstinent patients; MTas = 55.3 (SD = 12.8) for non-abstinent patients, t(134) = 0.02, p = 0.98]. So alexithymia did not, contrary to previous research reports, have a negative influence on abstinence at follow-up, time of treatment and dropping-out [17, 18].

The study population improved on all EuropASI domain scores (Cohen's d between 0.33 for "physical health" and 1.27 for "family and social relations", all $p < 0.001$). We stratified EuropASI change scores (baseline minus follow-up) for intervention type (CBT-SDMI versus CBT-TAU) because of interaction effects between intervention type and alexithymia. Differences between baseline high- and low-scoring alexithymic patients were found for the "work, income and education" domain in the CBT-SDMI group and for the "family and social relations" and "drugs" domains in the CBT-TAU-group (table 1).

Because of a strong support for alexithymia as a dimensional score [13] we also performed linear regression analyses with TAS-20 score as a continuous independent variable. In the CBT-TAU group, TAS-20 score was negatively associated with change in the "physical health" domain (β = -.27, p = 0.01), but positively with changes in the "drugs" (β = .22, p = 0.04), "family and social relations" (β = .26, p = 0.02), and "psychiatry" (β = .24, p = 0.03) domains.

Overall, highly alexithymic patients improved on the EuropASI change scores at least equally well as low-scoring alexithymic patients and alexithymia as a continuous score was predominantly positively associated with these change scores. However, statistically significant differences should be interpreted with caution because of the many tests that were performed.

Our results show that highly alexithymic SUD patients can profit from CBT with or without SDMI, and that the degree of alexithymia is not negatively related with resulting outcomes.

Limitations of our study were the absence of systematic urine or blood samples to confirm abstinence, and not having performed multi-method alexithymia assessments with an observer scale included [2]. There is critique of alexithymia as a categorical construct and the stability of alexithymia is under debate [13]. However, in answering our clinical question on whether a highly alexithymic SUD patient should be treated differently at the beginning of treatment, we made use of the two extremes of the categorical classification of alexithymia.

As highly alexithymic SUD patients performed very well and alexithymia was associated with the treatment outcomes, CBT may be used in this population even if patients present alexithymic features at intervention entry.

Multivariate linear regression analyses predicting change (baseline – follow-up) in EuropASI domains "physical health", "work, income and education", "alcohol", "drugs" ,"legal", "family and social relations", and "psychiatry" from baseline high-scoring alexithymic patients (TAS-20 > 60) versus low-scoring alexithymic patients (TAS-20 < 52), stratified by intervention type and all controlled for gender and age (not shown). Age and gender were, if non-significant, removed unless R-squared changed by >10%. CBT-SDMI: n = 49; CBT-TAU: n = 57.

"physical health"	β*	p	R^2
CBT-SDMI	.14	0.33	.02
CBT-TAU	-.22	0.10	.05
"work, income and education"			
CBT-SDMI	.29	0.04	.15
CBT-TAU	.23	0.08	.05
"alcohol"			
CBT-SDMI	.25	0.09	.11
CBT-TAU	.17	0.89	.17
"drugs"			
CBT-SDMI	-.03	0.86	.01
CBT-TAU	.27	0.04	.13
"legal"			
CBT-SDMI	-.16	0.24	.22
CBT-TAU	.15	0.24	.09
"family and social relations"			
CBT-SDMI	.10	0.48	.01
CBT-TAU	.28	0.03	.08
"psychiatry"			
CBT-SDMI	.02	0.89	.08
CBT-TAU	.25	0.06	.10

Note: CBT-SDMI = Cognitive Behavioral Therapy – Shared Decision Making Intervention ; CBT-TAU = Cognitive Behavioral Therapy – Treatment As Usual ; β* : High- versus low-scoring alexithymic patients.

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References

1 Lumley MA, Neely LC, Burger AJ: The assessment of alexithymia in medical settings: implications for understanding and treating health problems. J Pers Assess 2007;89:230–246.

2 Dorard G, Berthoz S, Haviland MG, Phan O, Corcos M, Bungener C: Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Compr Psychiatry 2008;49:585–592.

3 Thorberg FA, Young RM, Sullivan KA, Lyvers M: Alexithymia and al- cohol use disorders: a critical review. Addict Behav 2009;34:237–245.

4 van Rossum LGM, Laheij RJF, de Doelder MS, de Jong CAJ, Jansen J: Prevalence of gastrointestinal symptoms in alcoholics and the relation- ship with alexithymia. Psychiatry Res 2004;129:107–112.

5 Rosenblum A, Cleland C, Magura S, Mahmood D, Kosanke N, Foote J: Moderators of effects of motivational enhancements to cognitive be- havioral therapy. Am J Drug Alcohol Abuse 2005;31:35–58.

6 Cleland C, Magura S, Foote J, Rosenblum A, Kosanke N: Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance us- ers. J Psychosomat Res 2005;58:299–306.

7 Joosten EAG, DeFuentes-Merillas L, de Weert GH, Sensky T, van der Staak CPF, de Jong CAJ: Systematic review of the effects of shared de- cision-making on patient satisfaction, treatment adherence and health status. Psychother Psychosom 2008;77:219–226.

8 Joosten EAG, de Jong CAJ, de Weert-van Oene GH, Sensky T, van der Staak CPF: Shared decision-making reduces drug use and psychiatric severity in substance-dependent patients. Psychother Psychosom 2009; 78:245–253.

9 Taylor GJ, Bagby RM, Parker JDA: The 20-Item Toronto Alexithymia Scale. 4. Reliability and factorial validity in different languages and cultures. J Psychosom Res 2003;55:277–283.

10 Kooiman CG, Spinhoven P, Trijsburg RW: The assessment of alexi- thymia: a critical review of the literature and a psychometric study of the Toronto Alexithymia Scale-20. J Psychosom Res 2002;53:1083– 1090.

11 McLellan AT, Luborsky L, Woody GE, Obrien CP: Improved diagnostic evaluation instrument for substance abuse patients: addiction severity index. J Nerv Ment Dis 1980;168:26–33.

12 Hendriks VM, Kaplan CD, Vanlimbeek J, Geerlings P: The Addiction Severity Index: reliability and validity in a Dutch addict population. J Subst Abuse Treat 1989;6:133–141.

13 Parker JDA, Keefer KV, Taylor GJ, Bagby RM: Latent structure of the alexithymia construct: a taxometric investigation. Psychol Assess 2008; 20:385–396.

14 Taylor GJ, Bagby RM, Parker JDA: Disorders of Affect Regulation. Cambridge, Cambridge University Press, 1997.

15 Haviland MG, Hendry MS, Shaw DG, Henry JP: Alexithymia in women and men hospitalized for psychoactive substance dependence. Compr Psychiatry 1994;35:124–128.

16 de Timary P, Luts A, Hers D, Luminet O: Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: relationship to depression and anxiety. Psychiatry Res 2008;157:105–113.

17 Loas G, Fremaux D, Otmani O, Lecercle C, Delahousse J: Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Compr Psychiatry 1997;38:296–299.

18 Ziolkowski M, Gruss T, Rybakowski JK: Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence. Psychother Psychosom 1995;63:169–173.

Chapter 3

The level of alexithymia in alcohol-dependent patients does not influence outcomes after inpatient treatment **

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Keywords: substance use disorder, addiction severity, alcohol dependence, alexithymia.

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Abstract

Background: The inability of individuals with Alcohol Use Disorders (AUD) to recognize and describe their feelings and cravings may be due to alexithymia. Previous researches have shown evidence for a negative influence of alexithymia on treatment outcomes in patients with AUD. Therefore, it was hypothesized that high alexithymic patients with AUD would benefit less from cognitive behavioral therapy (CBT) treatment compared with low alexithymic patients.

Methods: One hundred alcohol-dependent inpatients (DSM IV) were assessed with the Mini International Neuropsychiatric Interview for psychiatric disorders, the Toronto Alexithymia Scale (TAS-20), and the European Addiction Severity Index (EuropASI). Baseline alexithymia, as a categorical and continuous variable, was used to compare or relate baseline demographic and addiction characteristics, time in treatment, abstinence, and differences in addiction severity at 1-year follow-up. Analyses were performed using Chi-square, analysis of variance or Kruskal-Wallis, paired *t*-tests or Wilcoxon's signed rank tests, multivariate logistic, and linear regression models, as appropriate.

Results: The prevalence of high alexithymia (TAS-20 > 60) was 45%. The total TAS-20 score correlated negatively with years of education (r =-.21; p = .04) and positively with the psychiatry domain of the EuropASI (r =.23; p = .04). Alexithymia showed no relation to abstinence, time in treatment, or change in severity of alcohol-related problems on the EuropASI.

Conclusion: High alexithymic patients with AUD do benefit equally from inpatient CBT-like treatment as low alexithymic patients with AUD.

Scientific significance: Multimethod alexithymia assessments with an observer scale have been advised to judge the relationship with resulting outcome in CBT.

Introduction

Alexithymia is predominantly seen as a personality construct that is characterized by a difficulty in identifying and describing feelings, inability to discriminate between feelings and physical sensations, limited fantasy life, and an externally oriented way of thinking (1). The prevalence of alexithymia in population-based studies varies between 8% and 15% (2). Some researchers have reported the prevalence of alexithymia up to 67% (3) in patients with alcohol use disorders (AUDs). In the general population, alexithymia has been associated with increasing age, low educational level, poor perceived health, and depression (4, 5). Additionally, in substance use disorders (SUDs), alexithymia was related to state of anxiety and depression (6).

Alexithymia has also been related to several somatic and psychiatric disorders, especially somatoform, mood, anxiety (PTSD), eating, and SUD (7). However, the support for alexithymia as a risk factor for AUD is present, but limited (3, 7-11).

Alexithymia is a negative prognostic factor for psychological treatments regarding insight, emotional awareness, or therapeutic alliance (12). However, in highly structured cognitive behavioral interventions, alexithymic patients seem to perform equally well as non-alexithymic patients (12).

There is a lack of therapeutic evaluations for alexithymia in SUDs, including AUD. Evidence for a negative influence of alexithymia on attrition rates, abstinence, and other treatment outcomes is available for AUD (3, 7-9, 11); however, less or not at all for patients with drug-only or a combination of alcohol and drug use disorders (7, 13). Rosenblum et al. (14) demonstrated less substance abuse in high-scoring alexithymic patients with SUD following group cognitive behavior therapy (CBT) compared with a group motivational intervention. In a recent study from our research group, CBT showed to be as effective in high versus low alexithymic patients with SUD, independent of a structured motivational intervention add-on treatment (13).

Because of the high prevalence of alexithymia in patients with AUD and the indication that alexithymic patients with AUD benefit less from addiction treatments, we were concerned about the suitability of our regular addiction therapy programs for patients with AUD. Most of these programs are CBT-oriented and administered in combination with some form of motivational interviewing (MI) (15). Patients are often asked to describe their feelings and cravings as part of these CBT interventions, and not properly responding to these questions can hinder the therapeutic relationship and, accordingly, have a negative influence on outcome results.

This study examined the following in patients with AUD: (a) the prevalence of alexithymia after successful detoxification; (b) the relationship between alcohol dependence severity and alexithymia (a positive correlation would support alexithymia as a risk factor for AUD); and (c) the predictive value of alexithymia on recovery after an inpatient treatment program based on CBT and motivational interviewing (MI).

Method

Study sample

Alcohol-dependent male patients with AUD (DSM IV) were recruited consecutively from Novadic-Kentron, an addiction treatment center in the south of the Netherlands, and were tested after 1 month of controlled abstinence. All patients were born in the Netherlands. This study was part of a research project that investigated the effects of the dopamine receptor agonist apomorphine on cognitive performance in male patients with AUD (16). After written informed consent, patients were screened for medical illness and axis I psychiatric disorders. Patients who required treatment for serious psychiatric disorders, such as psychotic or psycho-organic disorders, were excluded.

In this study, 100 alcohol-dependent inpatients, hospitalized between 2004 and 2007, participated and were assessed with the Toronto Alexithymia Scale (TAS-20) and the European Addiction Severity Index (EuropASI). The regional medical ethical assessment board approved this study (METiGG, protocol no.271).

Measures and procedures

Alexithymia was assessed at baseline with the Dutch version of the TAS-20 (17), which comprises three factors: (1) difficulty in identifying feelings (DIF), (2) difficulty in describing feelings (DDF), and (3) externally-oriented thinking (EOT). Each item consists of a five-point Likert scale that ranges from "completely disagree" to "completely agree." The TAS-20 provides a total score and three dimensional factor scores. We used the empirically derived cut-off points suggested by Taylor et al. (18); a total score of 61 and above indicates a high alexithymia score and scores of 51 and below indicate a low alexithymia score. A score from 52 to 60 represents a moderate degree of alexithymia.

Severity of substance use was established based on the EuropASI at baseline and at 1-year follow-up with the "alcohol," "drugs," and "psychiatry" domains of the EuropASI (19). The EuropASI is a clinical research interview tool designed to assess problem severity in seven areas of functioning: physical health, employment, alcohol and drug use, legal, family, social, and psychiatry. The seven severity domains, with scores that range from 0 (no problem) to 9 (extremely serious problem), were derived from this interview. The Dutch version of the Mini International Neuropsychiatric Interview (MINI) for psychiatric disorders version 2.1 (20) was used for detecting psychiatric, especially anxiety and depressive, disorders.

The participating treatment center used an inpatient cognitive behavioral approach with elements of MI, relapse prevention, and social skills training. Interventions were primarily groups, but they also implemented individual components. In the Netherlands, MI is widely known and used to motivate patients with SUD to start and stay in treatment (20).

The primary outcome parameter for recovery was abstinence at follow-up during the previous 30 days. Secondary outcome parameters included alcohol use (less than 5 units per day in the

previous year), time in treatment, and improvement between baseline and follow-up on the EuropASI domains "alcohol," "psychiatry," and "drugs," in case of comorbid drug abuse.

Data analysis

The prevalence of alexithymia is presented in percentages. Group comparisons of the baseline characteristics (Table 1); time in treatment; and abstinence of high, moderate, and low alexithymic patients were conducted using Chi-square for categorical data and analysis of variance (ANOVA) or the Kruskal-Wallis test for continuous data. Because of the critical discussion on alexithymia as a categorical variable (21), we also tested the relation of alexithymia as a continuous variable.

Changes between baseline and follow-up on the EuropASI severity scores were analyzed using paired *t*-test or Wilcoxon's signed rank test, as appropriate. Subsequently, "change scores" on the EuropASI severity scores were computed by subtracting the follow-up scores from the baseline scores. An ANOVA or the Kruskal-Wallis test was used to analyze differences in EuropASI "change scores" on domain level between baseline high, moderate, and low alexithymic patients. To estimate the effect size of changes on the EuropASI severity scores, Cohen's d $((\mu 1 - \mu 2) / \sigma 1)$ was calculated between baseline and follow-up.

Multivariate logistic and linear regression models were performed with abstinence and the EuropASI "change scores," respectively, as the dependent variables. The predictor variables, based on previous studies (2, 3, 6), included age, presence of anxiety or mood disorders, time in treatment, and the total baseline or factor (TAS-20) alexithymia score. Factor scores were also used as independent predictor variables, apart from the total TAS-20 scores, because of the multi-faceted construct of alexithymia and the differences in validity and reliability of the different TAS-20 factor scores (22). Variables with a p-value of less than .2 in the univariate analyses were entered in a full multivariate model. Subsequently, non-significant variables, except the alexithymia scores, were removed, one by one, until -2 log likelihood deteriorated significantly (logistic regression) or R^2 changed by more than 10% (linear regression). We included all patients with a baseline alexithymia assessment. Finally, all statistical tests were 2-sided, with p-values of less than or equal to .05 considered significant, and were performed using SPSS (IBM Corporation, Armonk, USA) for Windows (release 16.0).

Results

Prevalence of alexithymia

According to the cut-off score, 45% (N = 45) of patients had a high degree of alexithymia, 24% (N = 24) had a moderate degree of alexithymia, and 31% (N = 31) had a low degree of alexithymia. The mean (SD) score of the TAS-20 at baseline was 58.0 (10.7). The mean (SD) scores of the factors DIF, DDF, and EOT were 20.2 (6.0), 16.4 (4.1) and 21.5 (4.8), respectively.

Baseline differences between high, moderate, and low alexithymic patients

Table 1 shows the baseline characteristics for the high, moderate, and low alexithymic patients. High alexithymic patients had obtained fewer years of education compared with moderate and low alexithymic patients. As a continuous variable, the total TAS-20 score correlated negatively with years of education (r =-.21; p = .04) and positively with the "psychiatry" domain (r =.23; p = .04). However, the prevalence of anxiety or depressive disorders did not differ for low, moderate or high alexithymic patients.

All (n = 100) patients were alcohol dependent, but only for 83 patients EuropASI data were available on their co-morbid drug abuse. No difference in degree of alexithymia was found between the only alcohol dependent (n = 50) or comorbid drug abuse patients (n = 33; Table 1).

Table 1. *Baseline characteristics for low, moderate and high alexithymic patients (n=100)*

Patient characteristics	**Low alexithymic** (TAS < 52) (*n*=31)	**Moderate alexithymic** (51 < TAS < 61) (*n*=24)	**High alexithymic** (TAS > 60) (*n*=45)	χ^2	*F*	*P*
Age (years) Mean (S.D.) (*n*=91)	44.2(9.2)	44.7(8.3)	40.8(9.7)		1.81	0.17
Relationship % (*n*=92)				5.74		0.22
Married	30.8(4)	42.6(6)	23.1(3)			
Divorced/widowed	27.3(9)	21.2(7)	51.5(17)			
Never married	32.6(15)	17.4(8)	50.0(23)			
Employment % (*n*=87)				1.84		0.40
Employed	29.4(10)	17.6(6)	52.9(18)			
Unemployed	32.1(17)	28.3(15)	39.6(21)			
Education (years) Mean (S.D.) (*n* = 93)	13.2(3.7)	13.4(3.1)	11.6(3.1)		3.12	0.05
Co-morbid drug abuse % (*n*=83)				3.95		0.14
Only alcohol dependent	30.0(15)	32.0(16)	38.0(19)			
Alcohol and drug abuse	27.3(9)	15.2(5)	57.6(19)			
Years alcohol use > 5 U Mean (S.D.) (*n*=93)	15.7(11.2)	19.9(9.9)	18.4(10.2)		1.02	0.37
Any anxiety disorder % (*n*=90)	**19.2(5)**	**4.5(1)**	**23.8(10)**	**3.72**		**0.16**
Any depressive disorder % (*n*=91)	**29.6(8)**	**40.9(9)**	**26.2(11)**	**1.49**		**0.47**
EuropASI-scores Mean (S.D.)(*n*=84)						
Physical health	2.4(2.5)	2.8(2.5)	2.7(1.9)		0.25	0.78
Work, education and income	3.2(2.0)	4.6(1.8)	4.0(2.3)		2.90	0.06
Alcohol	6.0(1.1)	6.1(0.9)	6.3(1.3)		0.46	0.64
Drugs[1](*n*=33)	4.2(1.9)	3.0(1.6)	4.7(1.4)		2.48	0.10
Legal	1.4(1.6)	1.3(1.6)	1.3(1.8)		0.00	1.00
Family/social relations	4.2(1.9)	4.6(1.6)	4.0(2.1)		0.75	0.48
Psychiatric	4.5(1.9)	4.6(2.1)	4.9(1.6)		0.45	0.64

Notes: SD = Standard Deviation;
[1] Only patients with alcohol dependence and drug abuse

Predictive value of baseline alexithymia on recovery

Time in treatment

Data were missing for 14 patients. The mean (SD) time in (inpatient) treatment (days) for high (N = 40), moderate (N = 20), and low (N = 26) alexithymic patients did not differ significantly [131 (94); 176 (125); 128 (109), F=1.46 (2,83), p = .24, respectively]. In addition, as a continuous variable, alexithymia (total TAS-20) was not related to time in treatment (r =-.02, p = .88).

Abstinence at follow-up

For 93 (93.0%) patients, follow-up data for relapse of alcohol use were available. Fifty (53.8%) patients were abstinent for alcohol during the previous 30 days at the 1-year follow-up. Twenty-two (53.7%) of the baseline high alexithymics were abstinent for alcohol, 15 (65.2%) of the moderate, and 13 (44.8%) of the low alexithymics [χ^2 (2) = 2.15, p = .34]. For 6 of the 33 patients with comorbid drug abuse, data on abstinence at follow-up were missing. Seven (46.7%) of the baseline high alexithymic patients were abstinent for all substances at follow-up, two (50%) of the moderate and three (37.5%) of the low alexithymics [χ^2 (2) = 0.24, p = .89]. Total mean (SD) TAS-20 or factor (data not shown) scores did not differ between abstinent patients for alcohol (N = 50) and patients who had relapsed with alcohol (N = 43) [57.7 (10.0) and 57.7 (10.8), t (91) = .00, p = 1.00, respectively] or between abstinent patients with comorbid drug abuse for all substances (N = 12) or with any type of relapse (N = 15) [57.3 (9.6) and 59.7 (12.4), t (25) = .57, p = .58, respectively]. Based on these findings, logistic regression models with abstinence as the dependent variable were not performed. Baseline TAS-20 or factors did not predict abstinence at follow-up.

Alcohol abuse (greater than five units per day)

The median (Interquartile range, *IQR*: 25th to 75th percentile) number of months of more than five units of alcohol use per day during the past year was not significantly different between high | (N = 41), moderate (N = 23) and low alexithymic patients (N = 29; missing values: n = 7) [.0 (.0–3.0); .0 (.0–4.0); and 2.0 (.0–5.0), H(2) = 2.60, p = .27, respectively]. TAS-20 total, as a continuous variable, was not related to the average number of months of more than five units of alcohol use per day during the past year (rs = .04, p = .70).

Changes in EuropASI domains

The outcome results at the 12-month follow-up consisted of the following: 65 (77%) of the 84 patients on the EuropASI "alcohol" domain, 22 (67%) of the 33 mixed alcohol- and drug-using patients on the "drugs" domain, and 64 (75%) of the 84 patients on the "psychiatry" domain. The availability of follow-up data did not differ between baseline high, moderate, and low alexithymic patients [χ^2 (2) = .55, p = .76, χ^2 (2) = 4.08, p = .13, χ^2 (2) = .96, p = .62, respectively].

Patients improved on the EuropASI "alcohol" domain from a mean (SD) score of 6.3 (1.1) to a mean score of 3.3 (2.8) at follow-up [t (64) = 8.16, p < .0001] with a large effect size (Cohen's d = 2.7). In addition, the "psychiatry" domain showed a large improvement from a mean (SD) score of 4.7 (1.9) to 2.1 (2.7) [t (63) = 7.70, p < .0001] (Cohen's d = 1.4). Patients with co-morbid drug abuse (N = 22) improved on the "drugs" domain from a median (*IQR*: 25th to 75th percentile) of 5.0 (3.0–5.0) to .0 (.0–4.3) [z = -3.23, p = .001, r = -.51]. However, Kruskal-Wallis tests between baseline high, moderate, and low alexithymic patients on the "change score" of the EuropASI showed no significant differences for the "alcohol" and "psychiatry" domains. In patients with comorbid drug abuse, high alexithymic patients improved more so than low alexithymic patients (Table 2).

Table 2. *EuropASI severity "change scores" (baseline minus follow-up) for baseline high alexithymic, moderate and low alexithymic patients*

	Low alexithymic (TAS < 52)	**Moderate alexithymic** (51 < TAS < 61)	**High alexithymic** (TAS > 60)		
Patient characteristics				*H*	*P*
EuropASI-scores (*n*) Median (Interquartile Range)					
Alcohol	(*n*=19) 3.0 (4.5)	(*n*=17) 3.0 (4.5)	(*n*=29) 3.0 (5.0)	1.29	0.53
Drugs[1]	(*n*=8) 1.5 (5.3)	(*n*=4) 1.5 (4.0)	(*n*=10) 5.0 (3.3)	6.79	0.03
Psychiatric	(*n*=18) 3.5 (3.5)	(*n*=17) 2.0 (4.0)	(*n*=29) 3.0 (3.5)	2.67	0.26

Note: [1] only patients with alcohol dependence and drug abuse

Additionally, in multivariate linear regression models with EuropASI scores as dependent variables, baseline alexithymia, as a continuous variable, was only related to the change in the "drugs" domain in patients with co-morbid drug abuse (N = 22; Table 3). On the TAS-20 factor level, the DDF-factor was responsible (β = .46, p = .03; R^2 = .21; *Fchange* = 5.28, p = .03).

Table 3. *Multivariate linear regression analyses predicting change in EuropASI domains "alcohol", "drugs" and "psychiatry" from baseline to follow-up from baseline total TAS-20, age, time in treatment, change in the "psychiatry" domain* and presence of an anxiety or mood disorder. Non-significant variables, except TAS-20, were removed until* R^2 *changed by more than 10%.*

	β	*p*	R^2	*Fchange*	*P*
"alcohol" (n = 60)					
Anxiety disorder	-.23	0.07	.18	3.94	0.01
"Psychiatry" change	.33	0.01			
TAS-20 at baseline	.15	0.24			
"drugs" (n = 22)					
TAS-20 at baseline	.43	0.04	.19	4.56	0.04
"psychiatry" (n = 64)					
TAS-20 at baseline	.07	0.56	.01	0.34	0.56

Note: * the "psychiatry" domain was only used as an independent variable in the regression analyses on the "alcohol" and "drugs" domains.

Discussion

This study showed that the level of alexithymia had no relation to abstinence, time in treatment, or change in severity of alcohol-related problems after an inpatient CBT-oriented treatment in patients with AUD. Therefore, alexithymia is unlikely to be a negative prognostic factor in the CBT-treatment of patients with AUD.

Specifically, we found a high prevalence (45%) of (high) alexithymia in the abstinent inpatient AUD population, which is in line with previous studies (3). Our baseline data also showed limited evidence for associations between alexithymia and severity of AUD. This supports a review on this topic (3), which reported mixed evidence to suggest an association between alexithymia and severity of alcohol dependence. Worse scores for high alexithymic patients regarding years of education are in accordance with population-based studies (4, 5) and inpatient SUD-populations (18) but not found in a Turkish study (23). Our results should be interpreted with caution because of the many statistical tests performed.

The "psychiatry" domain of the Dutch EuropASI is moderately correlated with anxiety and depression symptoms (19). These symptoms are common in newly detoxified patients with AUD and are related to alexithymia (6). In the current data, as in our previous research on an inpatient SUD-population (13), alexithymia as a continuous variable was related to the "psychiatry" domain. Therefore, we cannot exclude that a part of higher baseline alexithymia scores could be interpreted as a state phenomenon that reflects momentary anxiety and depression symptoms (6, 24). However, for alexithymia as a categorical variable no difference on the "psychiatry" domain was found, nor differences in the prevalence of anxiety and depressive disorders, as measured with the MINI. Perhaps these anxiety and depression symptoms are more characteristic of addiction-related symptoms, for instance of delayed withdrawal, than specific for anxiety or depressive disorders.

Contrary to expectations and previous reports, yet conformed in another small study (10), alexithymia did not have any influence on abstinence at follow-up in patients with AUD (8, 9). We also did not find a relation between alexithymia and treatment attendance, in line with an outpatient treatment for patients with SUD, including patients with AUD (7). In our previous study of an inpatient SUD population, findings confirmed this lack of a relationship between alexithymia and abstinence, time in treatment, and drop-out at follow-up (13). We expected worse therapeutic outcomes for high alexithymic patients with AUD on the EuropASI change scores in comparison to low alexithymic patients. However, overall, high alexithymics did equally well as low alexithymics on the "alcohol" and "psychiatry" domains and alexithymia, as a continuous variable, was not related to change in these domains.

Regarding the "alcohol" domain, this finding is in line with our research on a SUD population (13); however, contrary to an outpatient AUD population with a much shorter follow-up (7). The mean (SD) total TAS-score in this population was 48.3 (12.7), which was considerably lower than

58.0 (10.7) in the current study. This finding could hinder a proper comparison between these studies.

High alexithymics in the patients with AUD with drug abuse performed even better on the "drugs" domain than did low alexithymics as confirmed by the regression analysis with alexithymia as a continuous independent variable (Table 3). This finding could not be explained by an improvement in anxiety or depressive symptoms as measured by the change in the "psychiatry" domain of the EuropASI. The DDF-factor was the responsible alexithymia factor; however, this result was based on a very small sample (N = 22) and should be interpreted with caution. In a previous study (7), alexithymia variables were not related to a change on the "drugs" domain. However, in our study on an inpatient SUD population (13), a positive relation between the total TAS-20 and the "drugs" domain was found. Of note, the EOT-factor was responsible in the later study. As DDF and EOT are very different factors of the alexithymia concept, these outcomes are not consistent and therefore probably the result of chance findings.

However, based on these findings, alexithymia, as measured with the TAS-20, is unlikely to be a negative prognostic factor in the treatment of drug or combined drug-alcohol related disorders.

Previous research has shown that, in general, alexithymia is related to negative treatment outcomes. However, sometimes alexithymia does not interfere with the outcome results; in three studies alexithymia was associated with some positive results (12,14). Our current results confirm that inpatient alexithymic patients with AUD, as we already found for a mixed drug and alcohol inpatient SUD population (13), can benefit from a CBT-oriented treatment.

Limitations of this study included the absence of systematic urine or blood samples to confirm abstinence and not measuring the change in depression and anxiety symptoms with more sensitive instruments. Our treatment interventions were also primarily group based and we did not check how much time was spent on individual interventions and coaching, neither did we record the differences in outpatient (after inpatient) treatment. Therefore, more individual attention for high alexithymic patients cannot be ruled out. The TAS-20, the most widely used measure of alexithymia, could also be criticized for being a self-report scale and for its psychometric shortcomings in alcohol-dependent populations (22). Some researchers have questioned whether a self-report instrument can adequately assess deficits that alexithymic patients may not be aware of (17). As a result, multimethod alexithymia assessments with an observer scale have been advised (25).

In conclusion we found that high alexithymic patients with AUD do benefit equally from inpatient CBT-like treatment compared to this treatment with low alexithymic patients with AUD. Thus, in contrast to the outcomes of previous studies (7, 12, 13, 15), we did not find an argument for measuring baseline alexithymia before an inpatient CBT-like intervention for patients with AUD or making therapeutic adjustments for high alexithymic patients with AUD.

References

1. Sifneos, P.E. Affect, emotional conflict and deficit - an overview. In *Psychother. Psychosom.*, 1991;Vol. 56, 116-122.
2. Salminen, J.K.; Saarijarvi, S.; Aarela, E.; Toikka, T.; Kauhanen, J. Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland. Journal of Psychosomatic Research 1999, *46* (1), 75-82.
3. Thorberg, F.A.; Young, R.M.; Sullivan, K.A.; Lyvers, M. Alexithymia and alcohol use disorders: A critical review. Addict. Behav. 2009, *34* (3), 237-245.
4. Mattila, A.K.; Salminen, J.K.; Nummi, T.; Joukamaa, M. Age is strongly associated with alexithymia in the general population. Journal of Psychosomatic Research 2006, *61* (5), 629-635.
5. Franz, M.; Popp, K.; Schaefer, R.; Sitte, W.; Schneider, C.; Hardt, J.; Decker, O.; Braehler, E. Alexithymia in the German general population. Soc. Psychiatry Psychiatr. Epidemiol. 2008, *43* (1), 54-62.
6. Haviland, M.G.; Hendry, M.S.; Shaw, D.G.; Henry, J.P. Alexithymia in women and men hospitalized for psychoactive substance dependence. Compr. Psychiat. 1994, *35* (2), 124-128.
7. Cleland, C.; Magura, S.; Foote, J.; Rosenblum, A.; Kosanke, N. Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. J. Psychosomat. Res. 2005, *58* (3), 299-306.
8. Loas, G.; Fremaux, D.; Otmani, O.; Lecercle, C.; Delahousse, J. Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Compr. Psychiat. 1997, *38* (5), 296-299.
9. Ziolkowski, M.; Gruss, T.; Rybakowski, J.K. Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence? Psychother. Psychosom. 1995, *63* (3-4), 169-173.
10. Junghanns, K.; Tietz, U.; Dibbelt, L.; Kuether, M.; Jurth, R.; Ehrenthal, D.; Blank, S.; Backhaus, J. Attenuated salivary cortisol secretion under cue exposure is associated with early relapse. Alcohol and Alcoholism 2005, *40* (1), 80-85.
11. Al Birt, M.; Sandor, V.; Vaida, A.; Birt, M.E. Alexithymia, a risk factor in alcohol addiction? A brief research report on Romanian population. Journal of Cognitive and Behavioral Psychotherapies 2008, *8* (2), 217-225.
12. Lumley, M.A.; Neely, L.C.; Burger, A.J. The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. J. Pers. Assess. 2007, *89* (3), 230-246.
13. de Haan, H.A.; E.A.G., J.; Wijdeveld, A.G.M.; Boswinkel, P.B.; van der Palen, J.; De Jong, C.A.J. Cognitive behavioural treatment is as effective in high versus low alexithymic patients with substance related disorders. Psychother. Psychosom. 2011, *80 (4)*, 254-5
14. Rosenblum, A.; Cleland, C.; Magura, S.; Mahmood, D.; Kosanke, N.; Foote, J. Moderators of effects of motivational enhancements to cognitive behavioral therapy. Am. J. Drug Alcohol Abuse 2005, *31* (1), 35-58.
15. Miller, W.R. Motivational interviewing with problem drinkers. Behavioural Psychotherapy 1983, *11* (2), 147-172.
16. Schellekens, A.F.A.; van Oosterwijck, A.; Ellenbroek, B.; de Jong, C.A.J.; Buitelaar, J.K.; Cools, L.; Verkes, R.J. The dopamine agonist apomorphine differentially affects cognitive performance in alcohol dependent patients and healthy controls. European Neuropsychopharmacology 2009, *19* (1), 68-73.
17. Kooiman, C.G.; Spinhoven, P.; Trijsburg, R.W. The assessment of alexithymia - A critical review of the literature and a psychometric study of the Toronto Alexithymia Scale-20. J. Psychosomat. Res. 2002, *53* (6), 1083-1090.
18. Taylor, G.J.; Bagby, R.M.; Parker, J.D.A.; *Disorders of affect regulation*; Cambridge university press: Cambridge, 1997.
19. Hendriks, V.M.; Kaplan, C.D.; Vanlimbeek, J.; Geerlings, P. The addiction severity index - reliability and validity in a Dutch addict population. Journal of Substance Abuse Treatment 1989, *6* (2), 133-141.
20. van Vliet, I.M.; de Beurs, E. [The MINI-International Neuropsychiatric Interview. A brief structured diagnostic psychiatric interview for DSM-IV en ICD-10 psychiatric disorders]. Tijdschr Psychiatr 2007, *49* (6), 393-7.
21. Parker, J.D.A.; Keefer, K.V.; Taylor, G.J.; Bagby, R.M. Latent Structure of the Alexithymia Construct: A Taxometric Investigation. Psychological Assessment 2008, *20* (4), 385-396.

22. Thorberg, F.A.; Young, R.M.; Sullivan, K.A.; Lyvers, M.; Hurst, C.; Connor, J.P.; Feeney, G.F. A confirmatory factor analysis of the Toronto Alexithymia Scale (TAS-20) in an alcohol-dependent sample. Psychiatry Res 2010, *178* (3), 565-7.
23. Evren, C.; Sar, V.; Evren, B.; Semiz, U.; Dalbudak, E.; Cakmak, D. Dissociation and alexithymia among men with alcoholism. Psychiatry Clin. Neurosci. 2008, *62* (1), 40-47.
24. de Timary, P.; Luts, A.; Hers, D.; Luminet, O. Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. Psychiatry Res. 2008, *157* (1-3), 105-113.
25. Dorard, G.; Berthoz, S.; Haviland, M.G.; Phan, O.; Corcos, M.; Bungener, C. Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Compr. Psychiat. 2008, *49* (6), 585-592.

Chapter 4

Alexithymia is not a stable personality trait in patients with substance use disorders**

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Abstract

The construct of alexithymia as a vulnerability factor for Substance Use Disorders (SUD) is under debate, because of conflicting research results regarding alexithymia as a state or trait phenomenon. The absolute and relative stability of alexithymia were evaluated in a pre-post design as part of a randomised controlled trial, controlling for several co-variates. Assessments were done with the Toronto Alexithymia Scale (TAS-20) and Addiction Severity Index (EuropASI) at baseline and follow-up of a 3-month trial of inpatient Cognitive Behavioural Therapy (CBT) with or without a Shared Decision Making intervention for 187 SUD patients. Paired sample t-tests and analyses of variance were performed to assess absolute stability, intra class correlations coefficients were calculated for relative stability and multivariate linear regression models were used to evaluate the relation between co-variates and change in alexithymia. Mean level reduction of total TAS-20 and two subfactors demonstrated no absolute stability, but change in alexithymia differed for low, moderate and high alexithymics. Relative stability of alexithymia was moderate to high for the total population, but differed for patients with low, moderate and high alexithymia scores. The EuropASI "psychiatry" domain, covering anxiety and depression, was related to alexithymia, but CBT-related variables were not. In conclusion, alexithymia is partly a state-dependent phenomenon, but not a stable personality trait in this SUD-population.

Introduction

Alexithymia refers to the difficulty in identifying and describing feelings, the inability to discriminate between feelings and physical sensations, having a limited fantasy life and the inclination to an externally oriented way of thinking (Sifneos, 1973). The Toronto Alexithymia Scale (TAS-20) is worldwide the most frequently used assessment instrument for alexithymia and includes three factors: (1) difficulty in identifying feelings (DIF), (2) difficulty in describing feelings (DDF) and (3) externally oriented thinking (EOT) (Bagby et al., 1994).

A Dutch study (van Rossum et al., 2004) reported 54% of alcohol use disorder (AUD) patients to be alexithymic with a mean score of 56 on the TAS-20, a finding that is in accord with research on alcohol related disorders in other studies (Thorberg et al., 2009). In other substance use disorder (SUD) populations alexithymia rates up to 67% have been found (Taylor et al., 1997; El Rasheed AH, 2001; Dorard et al., 2008).

Based on a reduction in alexithymia scores after detoxification in a homogeneous AUD population, it is suggested that alexithymia is a state-related phenomenon resulting from anxiety and depression (Haviland et al., 1988). In a comparable study with a heterogeneous SUD population (Pinard et al., 1996), however, no change in alexithymia scores was found and alexithymia appeared to be a stable trait. In a recent study in homogeneous AUD-patients the absolute and relative stability of alexithymia was evaluated during alcohol withdrawal; an absolute reduction (i.e. no absolute stability) of alexithymia scores was found (de Timary et al., 2008). The observed high relative stability over three time points, as well as the restricted influence of anxiety and depression, supported the view that alexithymia is a stable personality trait rather than a state-dependent phenomenon. The absolute decrease in alexithymia mean level score was in this study completely explained by a decrease of the DIF-factor.

In the literature there is an extensive debate on the state versus trait concept of alexithymia that focuses on the concept of absolute and relative stability of alexithymia as a personality characteristic. Previous research showed that stability status may change according to the population that is studied (Pinard et al., 1996; Honkalampi et al., 2001; Luminet et al, 2001; Rufer et al., 2004; Saarijarvi et al., 2006; Luminet et al., 2007; Stingl et al., 2008; de Timary et al., 2008).

Absolute stability refers to the extent to which average personality scores or trait levels of a population change. It is assessed by mean-level differences over time. These indicate if and in which direction the population as a whole is changing (Caspi et al. 2005). A systematic review or meta-analysis on the stability of alexithymia as a personality trait does not exist, but a meta-analysis of longitudinal studies of personality traits, according to the Five-Factor Model provided evidence for the continued plasticity beyond age 30 (Roberts et al., 2006).

Relative or rank-order stability indicates the extent to which the relative differences among individuals remain the same over time and is assessed by test-retest correlations (Caspi et al.

2005). From a meta-analysis of the rank-order stability of personality, also based on the Five-Factor Model, test-retest correlations were moderate in magnitude over time (Roberts and DelVecchio, 2000). There was an increase with age and a decrease with increasing intervals between the observations. Rank-order stability peaked sometime after age 50, at a level below unity, thus also indicating that personality traits continue to change throughout adulthood. Both meta-analyses (Roberts and DelVecchio, 2000, Roberts et al., 2006) demonstrate that personality trait development is not just a phenomenon of childhood or adolescence but continues during adulthood.

Alexithymia has been associated with negative treatment outcomes in different SUD populations (Loas et al., 1997; Ziolkowski et al., 1995; Cleland et al., 2005), which could be a rationale for addressing alexithymia in treating SUD patients. However, only as a stable personality trait alexithymia can be an autonomous vulnerability factor for SUD, as has also been suggested by de Timary et al. (2008). As a state phenomenon alexithymia is not an autonomous vulnerability factor, because, as has been shown, it is highly related to anxiety and depression in different populations (Haviland et al., 1988; Honkolampi et al., 2000). Anxiety and mood disorders both have a high co-morbidity with SUD and are predictors themselves for SUD (Compton et al., 2007; Grant et al., 2009).

The stability of alexithymia during or after treatment was investigated in several studies with conflicting results with regard to absolute stability. Most studies, however, supported the relative stability of alexithymia (Porcelli et al., 2003; Rufer et al., 2004; Micolajczak et al., 2006; Rufer et al., 2006; Saarijarvi et al., 2006; Luminet et al., 2007; Spek et al., 2008; Stingl et al., 2008). Depression was as a co-variable related to change in mean level alexithymia scores, especially in the DIF factor, but there was little or no relation to the EOT factor (Luminet et al., 2001).

There has been little research into the effects of psychotherapy on alexithymia and the available results are ambiguous. Some studies reported no change (Iancu et al., 2006), whereas others found a decrease in alexithymia during treatment (Lumley et al., 2007). In all these studies, the interventions were not specifically aimed at reducing alexithymia; thus, the changes seen could have reflected a reduction in associated symptoms such as depression, anxiety or psychological stress (Stingl et al., 2008).

Only a few reported studies (Beresnevaite, 2000; Gay et al., 2008) were specifically aimed at reducing alexithymic characteristics. In one of the studies group psychotherapy was associated with a decrease in mean levels of alexithymia with a resulting favourable influence on the clinical course of patients with Coronary Heart Disease. But the relative stability was still high 2 years after therapy (Beresnevaite, 2000).

Evaluations of alexithymia in homogeneous and heterogeneous SUD (Keller et al., 1995; Rosenblum et al., 2005) did not show a specific impact of various therapies on alexithymia scores. However, in one study (Rosenblum et al., 2005) alexithymic SUD patients profited more from a cognitive behavioural treatment (CBT) than from a motivational enhancement intervention.

Given the conflicting results concerning the stability of alexithymia in detoxifying or recently detoxified homogeneous AUD and heterogeneous SUD populations (Haviland et al., 1988; Pinard et al., 1996; de Timary et al., 2008) and the assumption that alexithymia only as a stable personality trait is a vulnerability factor for SUD, we were interested in evaluating the stability of alexithymia in a detoxified heterogeneous SUD-population after an inpatient treatment intervention. If alexithymia were not a stable personality trait and therefore not a vulnerability trait for SUD, there would be no need to assess and address alexithymia in SUD patients. Because the therapy was not specifically aimed at reducing alexithymic characteristics, we hypothesized that a) a mean level reduction of alexithymia and factor scores relates to a reduction in anxiety and/or depression, b) no differences in change of mean level alexithymia scores will be observed between "low", "moderate" and "high" alexithymic patients, when controlled for anxiety and depression c) there is a moderate to high relative stability of alexithymia and d) there is no difference in relative stability between "low", "moderate" and "high" alexithymic patients. In addition if it is shown that variance in follow-up alexithymia could be better predicted by baseline alexithymia than "state" conditions, like anxiety and depression, this would support the argument for the relative stability of alexithymia.

Methods

Subjects

Subjects were inpatients recruited from three addiction treatment centres in the East and South part of the Netherlands: Vincent van Gogh Institute, department Addiction Treatment, Novadic-Kentron and Tactus Addiction Treatment. The main study comprised a randomized controlled trial of Shared Decision Making (SDM) that was carried out from January 2005 to December 2006.

All 261 inpatients hospitalized during the study period with different forms of SUD were assessed for eligibility. Due to exclusion criteria (being under the age of 18, insufficient knowledge of the Dutch language, severe psychiatric co-morbidity precluding to take part in the study or no signed informed consent), refusing or early withdrawal, a total of 227 patients were randomised. Because seven patients later refused to participate and eight patients could not start because of an untimely stop at one study location, 107 patients started the SDM-intervention (SDM-CBT) and 105 patients started in the control group: decision making as usual, i.e. treatment as usual (TAU-CBT). However, TAS-20 baseline data were only available for 187 patients and complete TAS-20 follow-up data for 140 and incomplete (i.e. not all TAS-20 dimensions) for 151 patients. All patients had been diagnosed according to DSM-IV-TR as having one or more substance related disorders. At follow-up evaluation, patients received a voucher for EUR 20. The study was approved by the Dutch Ethical Assessment Committee for Experimental Investigations on People (No. 4.108).

Interventions

SDM-CBT was an add-on intervention on a standardised 3-month inpatient course of CBT with elements of motivational interviewing (MI), relapse prevention, social skills training and both individual and group components. SDM-CBT was a structured approach to reach a treatment agreement over five sessions and was also partly based on MI-techniques (Miller, 1996). TAU-CBT group received the same standardised 3-month inpatient CBT without the SDM-intervention. In the Netherlands MI is well known and used to motivate SUD patients to participate in treatment. In the SDM-CBT group MI was applied by protocol to evaluate indicated treatment goals. In the TAU-CBT group MI was also used but in an unstructured way and all participating centres used similar, unstructured, procedures to reach treatment agreement with patients. For a detailed explanation of the interventions, see Joosten et al. (2009).

For the alexithymia study we pooled the two groups (SDM-CBT and TAU-CBT) and controlled in the analyses for intervention.

Instruments

Alexithymia was assessed at baseline and at 3-month follow-up after a 3-month inpatient treatment using the Dutch version of the TAS-20 comprising three dimensions: (1) difficulty in identifying feelings (DIF), (2) difficulty in describing feelings (DDF) and (3) externally oriented thinking (EOT). Each item consists of a five-point Likert scale ranging from "completely disagree" to "completely agree". The TAS-20 can be analysed in its entirety or the three components can be analysed separately (Kooiman et al., 2002, Taylor et al., 1997). The TAS-20 total scores were categorised according to the empirically derived cut-off points suggested by Taylor et al. (Taylor et al., 1997): scores of 61 and above represent a "high" degree of alexithymia; scores of 51 or below indicate a "low" degree and from 52 to 60 a "moderate" degree of alexithymia. The Dutch total TAS-20 showed a good internal consistency in student and outpatient psychiatric populations with Cronbach's α varying between 0.79 and 0.82. The internal consistency for the DIF-factor was good, for the DDF-factor moderate to good and for the EOT-factor unsatisfactory (Cronbach's α: 0.52 - 0.66). (Kooiman et al., 2002)

The substance disorder was assessed and typified by using the Composite International Diagnostic Interview, Substance Abuse Module (CIDI-SAM) at baseline (Compton et al., 1996). The CIDI-SAM is an expanded and more detailed version of the substance use sections of the CIDI. The interview questions address the diagnostic criteria of DSM-IV (American Psychiatric Association, 1994) and ICD-10 (World Health Organization, 1992) psychoactive substance use disorders.

Severity of substance use was established on the basis of the European Addiction Severity Index (EuropASI) at baseline and at 3-month follow-up , that is, 3 months after finishing the 3-month inpatient treatment (McLellan et al., 1980; Hendriks et al., 1989). The EuropASI is a clinical research interview designed to assess problem severity in 7 domains of functioning:

physical health, employment, alcohol and/or drug use, legal, family/social and psychiatric. The Dutch version of EuropASI used in the present study also includes gambling. Eight severity scores that could range from 0 (no problem) to 9 (extremely serious problem) were derived from this interview. The psychiatric severity rating of the Dutch ASI is moderately correlated with the Beck Depression Inventory (BDI) (Beck et al., 1961) and the Symptom Check List - 90 (SCL-90) (Derogatis et al. 1973) mean score. Subscales of the SCL-90 also show moderate correlations with the psychiatric severity rating, with coefficients ranging from 0.48 for "depression" to 0.52 for "anxiety" (Hendriks et al., 1989).

Independent interviewers, not related to the treatment of patients, with a bachelor's or master's degree in psychology carried out the 3-month follow-up measurements.

Statistical analysis

The absolute stability of the TAS-20, factor scores and EuropASI severity domains between baseline and 3-month follow-up were tested with paired *t*-tests. Cohen's $d = (\mu 1 - \mu 2) / \sigma 1$ was calculated to determine the effect sizes for significant variables. Cohen defines *d* of 0.2, 0.5 and 0.8 as small, medium and large effects, respectively (Cohen, 1988). The differences in absolute stability between "low", "moderate" and "high" alexithymia scores were also tested by comparing the difference scores (subtracting baseline from follow-up alexithymia scores) with analysis of variance. Intraclass correlations were used to assess the relative stability of TAS-20 and factor scores between baseline and follow-up.

Multivariate linear regression models were performed with total alexithymia and factor scores at follow-up as the dependent variables. The predictor variables, partly based on previous research (Haviland et al., 1994, Rosenblum et al., 2005, Mattila et al., 2006, Joosten et al., 2009) were the EuropASI baseline and follow-up scores, age, gender, time in treatment, type of intervention (SDM-CBT or TAU-CBT) and baseline total alexithymia or factor scores. Effect modification was formally assessed by interaction terms between intervention type and baseline total alexithymia or factor scores. Variables with a $p < 0.15$ in univariate analyses (correlations between predictors and the different dependent variables) were entered in a full multivariate model. Subsequently, non-significant variables were removed, one by one, until *R*-squared changed by more than 10%.

To assess to what extent changes in alexithymia can be accounted for by therapy related variables, multivariate linear regression models were performed with TAS-20 and factor "change scores" (baseline minus follow-up scores) as the dependent variables and the EuropASI "change scores", age, gender, time in treatment, type of intervention (SDM-CBT versus TAU-CBT) and degree of baseline alexithymia as the predictor variables. Effect modification was formally assessed by interaction terms between intervention type and degree of baseline total alexithymia or factor scores. Variables with a $p < 0.15$ in univariate analyses (correlations between predictors and the different dependent variables) were entered in a full multivariate model. Subsequently, non-significant variables were removed, one by one, until *R*-squared changed by more than 10%.

All statistical tests were 2-sided, with a p-value ≤ 0.05 considered to indicate statistical significance and performed using SPSS for Windows (release 16.0).

Results

Baseline characteristics

TAS-20 baseline data were available for 187 patients, with no specific cause for this loss of data. No differences in baseline characteristics were found between these 187 patients and the (212 – 187) 25 other patients of the SDM-CBT and TAU-CBT groups (data not shown). Sixty-nine patients (36.9%) scored as "high" alexithymic, 29,4% ($n = 56$) "moderate" and 33.2% ($n = 62$) as "low" alexithymic. The mean baseline TAS-20 score for all patients was 55.9 (SD = 11.1). One hundred forty (75%) were male patients. Mean age was 40.7 (SD = 10.9) and mean years of education 11.4 (SD = 3.0). Forty-four percent had never been married, 39% were divorced or widowed and 17% were still married. Forty-four percent had no work and 94% were born in the Netherlands. In 54% alcohol was the substance of preference, cocaine or other stimulants in 11%, cannabis in 4%, polydrug use in 29% and other substances in 2%. There were no differences between men and women in substance use preference. To give insight in the most prominent differences of the degree of alexithymia on baseline characteristics, we compared the high and low alexithymia groups and left the moderate group out. "High" alexithymic patients did not differ from "low" alexithymic patients in gender, age, country of birth, relationship, type of substance dependence, substance preference, but fewer were employed [$\chi^2(1) = 3.9$, $p = 0.05$] and "high" alexithymics had fewer years of education [$t(129) = 2.0$, $p = 0.05$]. On the EuropASI-scores they differed only on the "work, education and income" domain [M "high" alexithymics = 4.0 (SD = 1.8); M "low" alexithymics = 3.3 (SD = 1.9); $t(129) = 2.1$, $p = 0.04$] and the "psychiatry" domain [M "high" alexithymics = 6.8 (SD = 1.2); M "low"-alexithymics = 5.1 (SD = 2.4); $t(129) = 5.23$, $p < 0.001$)]. Alexithymia measured as a continuous variable was also related to years of education ($r = -0.19$, $p = 0.01$) and the EuropASI "psychiatry" section ($r = 0.31$, $p < 0.001$), but not to the "work, education and income" section ($r = 0.12$, $p = 0.11$).

No differences were found in percentages between high, moderate and low alexithymic patients regarding type of intervention [$\chi^2(2) = 0.0$, $p = 0.99$]. In the SDM-group 36.7% were high, 30.0% moderate and 33.3% low alexithymic. In the TAU-group 37.1% were high, 29.9% moderate and 30.0% low alexithymic.

Baseline characteristics showed no significant differences between completers and drop-outs for EuropASI-, TAS-20- and factor scores, age, gender and type of intervention (data not shown). No differences were found in total TAS-20 scores between the four main addiction types in our sample, based on the primary addiction of the patients, i.e. alcohol, poly drug, stimulants and other substances (data not shown)

Follow-up data

Because of differences in missing values between the factor scores of alexithymia, complete TAS-20 scores for baseline and follow-up were available for 140 patients, DIF-scores for 148, DDF-scores for 151 and EOT-scores for 143 patients. Abstinence, drop-out and time in treatment were not different for baseline "low", "moderate" and "high" alexithymic patients (table 1). To be sure that we could pool the four main addiction types together we did an ANOVA on the difference scores for the total TAS-20 between baseline and follow-up and found no significant differences (data not shown). As part of the drop-out analyses we compared the 140 patients with complete TAS-20 follow-up scores with the 72 of the 212 baseline participants without these scores. Both groups differed on type of substance preference[$\chi^2(3) = 8.8$, $p = 0.03$] with 55.8% of the TAS-20 FU-group showing a preference for alcohol, 6.5% for stimulants, 31.9% for poly drug use and 5.8% for other substances. For the group without TAS-20 FU scores the percentages were respectively 47.9%, 18.3%, 23.9% and 9.9%. Next, in the SDM-CBT group 57.9% had TAS-20 FU scores and in the TAU-CBT group 74.3% [$\chi^2(1) = 6.3$, $p = 0.01$]. Time in treatment was also different. The mean of the group with TAS-20 FU scores was 115.1 days (SD = 56.2) and for the group without, the mean was 92.9 days (SD = 40.4) [$t(210) = 3.0$, $p = 0.003$]. No other differences were found (data not shown).

Table 1. *Follow-up data for abstinence, time in treatment and drop-out (n = 187)*

Characteristics	Low alexithymic (TAS-20 < 52)	Moderate alexithymic (51 < TAS-20 < 61)	High alexithymic (TAS-20 > 60)	χ^2	*F*	*P*
Abstinence (%)	45.7%	50.0%	52.0%	0.40		0.82
Time in treatment						
Mean (SD)	105.1 (48.6)	106.2 (53.0)	116.0 (58.9)		0.81	0.45
Drop-out (%)	56.5	58.9	49.3	1.30		0.52

Absolute stability

The paired sample t-tests showed significant reductions in total TAS-20-, DIF- and DDF-scores from baseline to follow-up with small effect sizes. For the EuropASI domains the reductions at follow-up were all significant and effect sizes varied from small ($d = 0.20$: gambling) to large ($d = 1.27$: family / social relations) (table 2).

Table 2. *TAS-20 total and factor scores and EuropASI scores from baseline to follow-up: paired sample t-tests*

Severity-scores Mean (SD)	Baseline	Follow-up	*T*	*p*	*d* (Cohen)
TAS-20 (*n*=140)	55.9 (11.1)	53.8 (11.8)	2.3	0.02	0.19
DIF (*n*=148)	19.1 (6.0)	18.0 (6.5)	2.1	0.04	0.18
DDF (*n*=151)	16.3 (4.3)	15.0 (4.0)	3.8	< 0.001	0.31
EOT (*n*=143)	20.4 (4.1)	20.6 (3.9)	-0.4	0.67	-0.04
EuropASI scores (*n*=152)					
Physical health	2.6 (2.1)	1.9 (2.0)	5.0	< 0.001	0.33
Work, education and Income	3.5 (1.8)	2.7 (2.0)	5.1	< 0.001	0.39
Alcohol	5.3 (2.5)	3.4 (2.4)	9.6	< 0.001	0.72
Drugs	3.2 (3.2)	2.0 (2.6)	8.0	< 0.001	0.34
Legal	1.5 (1.8)	0.4 (1.1)	8.5	< 0.001	0.58
Family / social relations	4.3 (1.5)	2.4 (2.1)	9.5	< 0.001	1.27
Psychiatric	5.7 (2.0)	3.6 (2.4)	9.8	< 0.001	1.10
Gambling	0.3 (1.0)	0.1 (0.6)	3.2	0.001	0.20

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"

The mean change scores (baseline minus follow-up) for the TAS-20 and the different factors between "low", "moderate" and "high" alexithymic patients were highly significant (table 3). Post-hoc analyses showed that the changes for the "high" alexithymics differed from the "low" alexithymics and, except for the DDF factor, also from the "moderate" alexithymics. "Low" alexithymics differed on the total TAS-20 and the DDF factor from the "moderate" alexithymics. The total and factor TAS-20 scores for "low" alexithymic patients were larger at follow-up compared with baseline, while the scores for "moderate" and "high" alexithymic patients were lower (the reduction was greatest in "high" alexithymics). ANOVA on the mean change scores of the EuropASI psychiatry domain, measuring also depression and anxiety, for baseline "low" (M = 2.0, SD = 2.8), "moderate" (M = 1.6, SD = 2.6) and "high" (M = 2.7, SD = 2.5) alexithymic patients indicated no significant differences [$F(2,130) = 2.12$, $p = 0.12$].

Table 3. *Mean difference score for TAS-20 and factor scores (baseline – follow-up) for low (TAS-20 < 52), moderate (51 < TAS-20 < 61) and high (TAS-20 > 60) alexithymic patients at baseline: ANOVA*

	Low alexithymia Mean (SD) (*n*)	Moderate alexithymia Mean (SD) (*n*)	High alexithymia Mean (SD) (*n*)	*F*	*p*	Post-hoc (Tukey)
Total TAS-20	-3.8 (11.2) (52)	1.5 (9.8) (43)	7.9 (9.0) (52)	16.74	<0.001	3 > 2 >1
DIF	-1.9 (6.1) (46)	0.8 (6.2) (45)	3.8 (6.0) (53)	10.79	<0.001	3 > 1,2
DDF	-0.9 (4.3) (47)	1.7 (4.2) (46)	2.6 (3.4) (53)	10.20	<0.001	3,2 > 1
EOT	-1.2 (4.8) (46)	-0.8 (4.0) (44)	1.5 (3.8) (52)	5.91	0.003	3 > 1,2

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"

Relative stability

Intraclass correlation (ICC) for the total TAS-20 between baseline and follow-up was 0.52, for DIF 0.45, DDF 0.44, and EOT 0.42 (all $p < 0.001$). This means that effect sizes for relative stability were all on a moderate to high level. ICC's for patients with a baseline "low", "moderate" and "high" alexithymic score differed considerably, especially on the total TAS-20. Baseline "moderate" alexithymic patients had non-significant low ICC's (except for EOT) and "low" and "high" alexithymic patients had nearly all significant low to moderate ICC's. Only the EOT factor demonstrated significant ICC's for all patients (table 4).

Table 4. *Intra class correlations (ICCs) for TAS-20 and factors between baseline and follow-up for low, moderate and high baseline alexithymic patients*

ICC	low alexithymia *(p) (n)*	moderate alexithymia *(p) (n)*	high alexithymia *(p) (n)*
Total TAS-20	.30 ($p = 0.02$) ($n = 45$)	-.06 ($p = 0.67$) ($n = 43$)	.20 ($p = 0.08$) ($n = 52$)
DIF	.26 ($p = 0.04$) ($n = 46$)	.15 ($p = 0.17$) ($n = 45$)	.22 ($p = 0.05$) ($n = 53$)
DDF	.33 ($p = 0.01$) ($n = 47$)	.09 ($p = 0.26$) ($n = 46$)	.28 ($p = 0.02$) ($n = 53$)
EOT	.37 ($p = 0.005$) ($n = 46$)	.33 ($p = 0.01$) ($n = 44$)	.23 ($p = 0.05$) ($n = 52$)

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"; ICC = Intra Class Correlation

In predicting TAS-20 at follow-up the EuropASI factor "psychiatry" at follow-up ($\beta = 0.22$) contributed a small part compared with the TAS-20 at baseline ($\beta = 0.50$) (table 5). Regarding the prediction of the DIF factor at follow-up baseline DIF contributed just a little more ($\beta = 0.44$) to the variance than "psychiatry" at follow-up ($\beta = 0.29$), age ($\beta = 0.21$) and the baseline EuropASI "alcohol" domain ($\beta = -0.16$). In predicting the DDF-factor at follow-up, the "drugs" domain at baseline contributed a smaller part to the variance ($\beta = 0.20$) than baseline DDF ($\beta = 0.47$). The "legal" domain at follow-up contributed to the variance ($\beta = 0.19$) of the EOT-factor at follow-up, but less than the baseline EOT factor ($\beta = 0.41$) (table 5).

Table 5. *Multivariate linear regression analysis predicting TAS-20 total and factor scores at follow-up from EuropASI severity scores, gender, age, time in treatment, intervention type and TAS-20 at baseline. Non-significant variables were removed until R-squared changed by more than 10%.*

Factors	β	*p*	R^2	*Fchange*	*p*
Total TAS-20 (n=140)					
EuropASI			.33	34.01	< 0.001
"Psychiatry"(FU)	.22	0.002			
TAS-20 at baseline	.50	< 0.001			
DIF (n=148)					
EuropASI			.34	18.00	< 0.001
"Alcohol" (Baseline)	-.16	0.04			
EuropASI					
"Psychiatry"(FU)	.29	< 0.001			
Age	.21	0.007			
DIF at baseline	.44	< 0.001			
DDF (n=151)					
EuropASI			.26	26.32	< 0.001
"Drugs"(Baseline)	.20	0.007			
DDF at baseline	.47	< 0.001			
EOT (n=142)					
EuropASI			.21	18.49	< 0.001
"legal"(FU)	.19	0.01			
EOT at baseline	.41	<0.001			

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"; FU = Follow-Up

Performing regression models with total TAS-20 and factors "change scores" as the dependent variables gender, type of intervention, time in treatment and all EuropASI "change scores" except the "psychiatry" and "drugs" domains did not have any predictive value. EuropASI "psychiatry" change score contributed small parts (β: 0.13 to 0.21) to the variance of the TAS-20 and factor "change scores" (table 6). Baseline alexithymia as a categorical variable explained larger parts of the variances (β: 0.28 to 0.48). Age was negatively related to the change in the DIF factor and contributed minimally to the variance (β = -0.15). The "change score" of the EuropASI "drugs" domain was inversely related to the "change score" of the DDF-factor and explained a small part (β = -0.17) of the variance. For both the regression models no effect modification by treatment assignment was present.

Table 6. *Multivariate linear regression analysis predicting TAS-20 "change" (baseline - follow-up) total and factor scores from EuropASI "change" scores (baseline - follow-up), gender, age, time in treatment, type of intervention and degree of alexithymia (low, moderate or high) at baseline. Non-significant variables were removed until R-squared changed by more than 10%.*

Factors	β	*p*	R^2	*Fchange*	*p*
Total TAS-20 (n=139)					
EuropASI "change"			.24	14.36	< 0.001
"Psychiatry"	.21	0.007			
Low vs. moderate alexithymia	.25	0.005			
Low vs. high alexithymia	.48	< 0.001			
DIF (n=143)					
EuropASI "change"			.19	8.11	< 0.001
"Psychiatry"	.18	0.002			
Age	-.15	0.06			
Low vs. moderate alexithymia	.20	0.02			
Low vs. high alexithymia	.38	< 0.001			
DDF (n=145)					
EuropASI "change"			.16	6.74	< 0.001
"Drugs"	-.17	0.04			
"Psychiatry"	.13	0.11			
Low vs. moderate alexithymia	.31	0.001			
Low vs. high alexithymia	.40	< 0.001			
EOT (n=141)					
EuropASI "change"			.10	4.79	0.003
"Psychiatry"	.14	0.10			
Low vs. moderate alexithymia	.07	0.50			
Low vs. high alexithymia	.28	0.004			

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"

Discussion

The baseline alexithymia mean score of 55.7 on the TAS-20 and the prevalence of "high" alexithymic patients of 37% is comparable to other reported homogeneous and heterogeneous SUD studies (de Timary et al., 2008; Dorard et al., 2008; Taylor et al., 1997). A higher score on the EuropASI "psychiatry" domain for alexithymic patients is in line with the higher scores on depression and anxiety in recently detoxified homogeneous AUD-patients (Haviland et al., 1988; de Timary et al., 2008). However the EuropASI is not an optimal instrument for measuring depression and anxiety. More unemployment and less education match a larger score for "high" alexithymic patients on the EuropASI "work, education and income" domain, confirming previous epidemiological studies (Saarijarvi et al., 1993; Mattila et al., 2006).

Unlike the study of Pinard et al (1996), but in accord with de Timary et al. (2008) we did not find absolute stability in total TAS-20 and factor scores. Pinard et al. (1996) found an insignificant increase in total TAS-20 and factor scores after 4 – 6 weeks of abstinence, but the study population

was very small (n = 21). In the study of de Timary et al. the EOT factor, with no gender difference, and the DDF factor, only for men, showed absolute stability. The reduction reported by de Timary et al. (2008) in 14 – 18 days (difference score = 4.1, Cohen's *d* = 0.38) for the total TAS-20 was larger than the reduction we found (difference score = 2.1, Cohen's *d* = 0.19) in about half a year. A larger decrease in depression and anxiety during the detoxification process could be responsible for this difference. However the effect sizes (T1 – T3) for the reductions in BDI-scores (*d* = 0.89) and for STAI-scores (State-Trait Anxiety Inventory) (*d* = 0.95) in the de Timary et al (2008) study, were smaller than our effect size for the reduction in the EuropASI "psychiatry" domain (*d* = 1.10).

Absolute changes in total TAS-20 scores vary for different populations and different interventions, but also regarding the different TAS-20 factors. We found mean level stability for the EOT factor and mean level changes for the total TAS and DIF and DDF scores, whereas others found mean level stability for DIF and EOT factors (Rufer et al., 2004), for DDF (only for men) and EOT factors (de Timary et al., 2008) or only for the DDF factor (Luminet et al., 2007).

However, our data demonstrated another prominent difference in mean level stability for the total TAS-20 and the factor scores between "low", "moderate" and "high" alexithymic patients. The most obvious change was a reduction for all TAS-scores in the "high" alexithymia group. In the "low" alexithymia group all the TAS scores increased. The "moderate" group showed a more ambivalent outcome with a reduction for the total TAS, DIF and DDF factors and an increase for the EOT factor. These results could not be explained by a related change in anxiety and/or depression, as measured by the EuropASI "psychiatry" domain. This phenomenon looks like a "regression toward the mean" and is to our knowledge not described in previous research on stability in alexithymia. Another study (Honkalampi et al., 2001) found, despite an absolute stability of TAS scores, a shift from categories of alexithymia at follow-up, but this could be explained by a related change of depression scores. Besides, the magnitude of change between the categories was difficult to interpret because of the borderline problems near the cut-off scores: a minimal change of scores near the cut-off points has more impact than a larger change of scores with more distance from the cut-off points. That is why we used numeric mean level scores for the analyses between the categories.

The results showed moderate levels of relative stability, with the lowest score for the EOT factor and the highest score for the total TAS-20. Unlike our results, the EOT factor appeared to be the factor with the highest relative stability in other studies (Honkalampi et al., 2001; Rufer et al.; 2004, Saarijarvi et al., 2006; Luminet et al., 2007; Speranza et al., 2007). The length of time between assessments has a known negative effect on relative stability, implying that larger changes occur as more time passes between assessments (Roberts et al., 2006). Relative stability in our patients after 6 months was lower than found in the general population after a period of a year (Honkalampi et al., 2001); 18 days of detoxification (de Timary et al., 2008); a 14-week intervention for depression (Luminet et al., 2001); a period of 6 months in patients with breast

cancer (Luminet et al., 2007); 70-day or 6-year follow-up of multimodal cognitive behaviour therapy for obsessive-compulsive patients (Rufer et al., 2004; Rufer et al., 2006); 4 – 12 weeks of inpatient psychotherapy (Stingl et al., 2008). In a 5-year follow-up study of outpatients with major depression relative stability was lower, but not for the DDF and EOT factor (Saarijarvi et al., 2006) and in a 3-year prospective study in patients with eating disorders (Speranza et al., 2007) relative stability, except for the EOT factor, had nearly the same magnitude. The differences in time are not, conforming to the prediction of Roberts et al. (2006), in a uniform way related to the degree of relative stability. However the difference in populations hampers making a clear comparison between these different groups, especially because the variety of interventions could have different impacts on the change in alexithymia (factors) and therefore also in their relative stability.

The differences in relative stability for baseline "low", "moderate" and "high" alexithymic patients has to our knowledge not been described before. "Low" and "high" alexithymics showed low to moderate correlations and "moderate" alexithymics non-significant low correlations, except for the EOT factor. In spite of demonstrating the lowest ICC for the total sample, the EOT factor had the highest ICCs on categorical level in comparison with the total TAS and the two other factors. These findings plead against the alexithymia concept of a stable personality construct in this population.

The regression analyses showed that alexithymia at baseline was the best predictor of alexithymia at follow-up for total TAS-20 and factor scores, but explained at best a moderate part of the variance. Other variables, like age, the EuropASI domains "alcohol", "drugs", "legal" and even "psychiatry" contributed only minimally as predictors. In predicting alexithymia "change scores" changes in depression and anxiety, as measured with the EuropASI "psychiatry" domain, explained a minor part. When looking at change in alexithymia scores, a larger part of the change in alexithymia was explained by the baseline degree of alexithymia. Intervention-related variables as time in treatment or intervention type had no relation at all with the change of alexithymia scores.

In response to our questions and hypotheses, we found a mean level reduction of alexithymia and factor scores, however only for a small part related to a reduction in anxiety and/or depression, as measured with the EuropASI "psychiatry" domain. There were significant differences in change of alexithymia scores between baseline "low", "moderate" and "high" alexithymic patients, even when controlled for anxiety and depression. Relative stability for total TAS-20 and factor scores was moderate to high, but predominantly lower than described in previous research. However, relative stability showed remarkable differences for baseline "low", "moderate" and "high" alexithymic patients. In spite of a mean level reduction of alexithymia, for the greater part not related to anxiety and/or depression, we did not find a relationship with type of intervention. So we have insufficient arguments to attribute the difference in CBT-interventions to the reductions in alexithymia.

In their meta-analysis Roberts et al. (2006) demonstrated that personality traits do not stop changing and their findings were most consistent with interactional models of personality development.

The interpretation of to what degree modifications of personality represent intrinsic maturational processes or reflect life experiences, perhaps facilitated by therapy or periods of abstinence, is currently under debate (Wilberg et al., 2009). Especially for SUD patients with a predominantly devastating lifestyle, it is conceivable that a 3-month inpatient therapy could be a catch-up period for normative change of personality traits. This process could be different for the individual patients and therefore be an explanation for the lower relative stability in comparison with other studies, where the treatments were perhaps less intensive or the variety in "normative change" possibilities between the patients was more limited. However, that does not explain the differences we found in stability between "low", "moderate" and "high" alexithymic SUD patients. Alexithymia could therefore in our patients partially be described as a state phenomenon, given the relation of the absolute stability of the TAS-20 with the changes in EuropASI-scores. However, the combination of the change in absolute stability not related to anxiety or depression, the differences in absolute stability between low, moderate and high alexithymic patients and especially the big differences of the relative stability between these three groups plead against alexithymia, measured with the TAS-20, as a stable autonomous personality trait in this population.

In future studies, especially in intervention studies, it would be interesting to compare the change of the alexithymia trait component with the change of other personality constructs, like the five-factor model. If changes in relative stability for alexithymia and these five factors are related, then that would be an argument for alexithymia as a stable personality trait. Because the differences between the low, moderate and high alexithymic patients in absolute and relative stability have not been reported in previous research, these results have to be replicated to be sure that this is not a chance finding. It would also be advisable to perform research on the stability concept of alexithymia with other alexithymia assessment instruments, like the Bermond Vorst Alexithymia Questionnaire, the Observer Alexithymia Scale and the Toronto Structured Interview for Alexithymia (Haviland et al., 2001; Vorst and Bermond, 2001; Bagby et al., 2006; Grabe et al., 2009) and in a more homogeneous, such as a population only dependent alcohol.

Limitations of our study were the absence of systematic urine or blood samples to confirm abstinence and not measuring the change in depression and anxiety symptoms with more sensitive instruments, like the Hamilton Depression Rating Scale (Hamilton, 1967) or the BDI (Beck et al., 1961). Next it would be better to perform multimethod alexithymia assessments with an observer scale included as the TAS-20 could be criticized for being a self-report scale and many researchers have questioned whether a self-report instrument can adequately assess alexithymia (Kooiman et al, 2002; Grabe et al. 2009). At least the heterogeneity in types of substance dependence of our sample could be criticized.

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References

American Psychiatric Association,1994. Diagnostic and statistical manual of mental health disorders (4th ed.). Washington DC, American Psychiatric Press.

Bagby, R.M., Parker, J.D.A., Taylor, G.J., 1994. The twenty-item Toronto Alexithymia Scale: I. Item selection and cross-validation of the factor structure. Journal of Psychosomatic Research, 38(1), 23-32.

Bagby, R. M., Taylor, G. J., Parker, J. D. A., Dickens, S. E., 2006. The development of the Toronto Structured Interview for Alexithymia: Item selection, factor structure, reliability and concurrent validity. Psychotherapy and Psychosomatics, 75, 25–39.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., Erbaugh, J., 1961. An inventory for measuring depression. Archives of General Psychiatry 4, 561–71

Beresnevaite, M., 2000. Exploring the benefits of group psychotherapy in reducing alexithymia in coronary heart disease patients: a preliminary study. Psychotherapy and Psychosomatics 69,117-122.

Caspi, A., Roberts, B.W., Shiner, R.L., 2005. Personality Development: stability and change. Annual Review of Psychology. 56, 453-484.

Cleland, C., Magura, S., Foote, J., Rosenblum, A., Kosanke, N., 2005. Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. Journal of Psychosomatic Research 58, 299-306.

Cohen, J., 1988. Statistical power analysis for the behavioural sciences (2nd edition). Hillsdale NJ: Lawrence Earlbaum Associates.

Compton, W. M., Cottler, L. B., Dorsey, K. B., Spitznagel, E. L.,Mager, D. E., 1996. Comparing assessments of DSM-IV substance dependence disorders using CIDI-SAM and SCAN (vol 41, pg 179, 1996). Drug and Alcohol Dependence 42, 217-219.

Compton, W.M., Thomas, Y.F., Stinson, F.S., Grant, B.F., 2007. Prevalence, correlates, disability and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the national epidemiological survey on alcohol and related conditions. Archives of General Psychiatry, 64 (5), 566-576

Derogatis, L.R., Lipman, R.S., Cori, L., 1973. SCL-90: an outpatient psychiatric rating scale-preliminary report. Psychopharmacological Bulletin 9, 13-28.

de Timary, P., Luts, A., Hers, D., Luminet, O., 2008. Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. Psychiatry Research 157, 105-113.

Dorard, G., Berthoz, S., Haviland, M. G., Phan, O., Corcos, M., Bungener, C., 2008. Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Comprehensive Psychiatry 49, 585-592.

El Rasheed AH, 2001. Alexithymia in egyptian substance abusers. Substance Abuse 22 (1), 11-22.

Gay, M.C., Hanin, D., & Luminet, O., 2008. Effectiveness of an hypnotic imagery intervention on reducing alexithymia. Contemporary Hypnosis, 25 (1), 1-13.

Grabe, H.J., Lobel, S., Dittrich, D., Bagby, R.M., Taylo,r G.J., Quilty, L.C., Spitzer, C., Barnow, S., Mathier, F., Jenewein, J., Freyberger, H.J., Rufer, M., 2009. The German version of the Toronto structured interview for alexithymia: Factor structure, reliability, and concurrent validity in a psychiatric patient sample. Comprehensive Psychiatry, 50, 424-430.

Grant, B.F., Goldstein, R.B., Chou, S.P., Huang, B., Stinson, F.S., Dawson, D.A., Saha, T.D., Smith, S.M., Pulay, A.J., Pickering, R.D., Ruan, W.J., Compton, W.M., 2009. Sociodemographic and psychopathological predictors of first incidence of DSM-IV substance use, mood and anxiety disorders: results from the Wave 2 National Epidemiological Survey on Alcohol and Related Conditions. Molecular Psychiatry, 14 (11), 1051 - 1061

Hamilton, M, 1967. Development of a rating scale for primary depressive illness. *British Journal of Social and Clinical Psychology* **6**, 278-96

Haviland, M. G., Macmurray, J. P.,Cummings, M. A., 1988. The relationship between alexithymia and depressive symptoms in a sample of newly abstinent alcoholic inpatients. Psychotherapy and Psychosomatics 49, 37-40.

Haviland, M. G., Hendry, M. S., Shaw, D. G.,Henry, J. P., 1994. Alexithymia in women and men hospitalized for psychoactive substance dependence. Comprehensive Psychiatry 35, 124-128.

Haviland, M.G., Warren, W.L., Riggs, M.L., Gallacher, M., 2001. Psychometric properties of the Observer Alexithymia Scale in a clinical sample. Journal of Personality Assessment, 77,176–186

Hendriks, V. M., Kaplan, C. D., Vanlimbeek, J., Geerlings, P., 1989. The Addiction severity index-reliability and validity in a Dutch population. Journal of Substance Abuse Treatment 6, 133-141.

Honkalampi, K., Koivumaa-Honkanen, H., Tanskanen, A., Hintikka, J., Lehtonen, J., Viinamaki, H., 2001. Why do alexithymic features appear to be stable? A 12-month follow-up study of a general population. Psychotherapy and Psychosomatics 70, 247-253.

Honkalampi, K., Hintikka, J., Tanskanen, A., Lehtonen, J., Viinamaki, H., 2000. Depression is strongly associated with alexithymia in the general population. Journal of Psychosomatic research 48, 99-104.

Iancu, I., Cohen, E., Ben Yehuda, Y., Kotler, M., 2006. Treatment of eating disorders improves eating symptoms but not alexithymia and dissociation proneness. Comprehensive Psychiatry 47, 189-193.

Joosten, E. A. G., de Jong, C. A. J., de Weert-van Oene, G. H., Sensky, T.,van der Staak, C. P. F., 2009. Shared Decision-Making Reduces Drug Use and Psychiatric Severity in Substance-Dependent Patients. Psychotherapy and Psychosomatics 78, 245-253.

Keller, D. S., Carroll, K. M., Nich, C., Rounsaville, B. J., 1995. Alexithymia in cocaine abusers-response to psychotherapy and pharmacotherapy. American Journal on Addictions 4, 234-244.

Kooiman, C. G., Spinhoven, P.,Trijsburg, R. W., 2002. The assessment of alexithymia - A critical review of the literature and a psychometric study of the Toronto Alexithymia Scale-20. Journal of Psychosomatic Research 53, 1083-1090.

Loas, G., Fremaux, D., Otmani, O., Lecercle, C., Delahousse, J., 1997. Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Comprehensive Psychiatry 38, 296-299.

Luminet, O., Bagby, R. M.,Taylor, G. J., 2001. An evaluation of the absolute and relative stability of alexithymia in patients with major depression. Psychotherapy and Psychosomatics 70, 254-260.

Luminet, O., Rokbani, L., Ogez, D., Jadoulle, V., 2007. An evaluation of the absolute and relative stability of alexithymia in women with breast cancer. Journal of Psychosomatic Research 62, 641-648.

Lumley, M. A., Neely, L. C., Burger, A. J., 2007. The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. Journal of Personality Assessment 89, 230-246.

Mattila, A. K., Salminen, J. K., Nummi, T., Joukamaa, M., 2006. Age is strongly associated with alexithymia in the general population. Journal of Psychosomatic Research 61, 629-635.

McLellan, A. T., Luborsky, L., Woody, G. E., Obrien, C. P., 1980. Improved diagnostic evaluation instrument for substance abuse patients - Addiction Severity Index. Journal of Nervous and Mental Disease 168, 26-33.

Micolajczak, M., Luminet, O., 2006. Is alexithymia affected by situational stress or is it a stable trait related to emotion regulation. Personality and Individual Differences 40, 1399-1408.

Miller, W. R., 1996. Motivational interviewing: Research, practice, and puzzles. Addictive Behaviors 21, 835-842.

Pinard, L., Negrete, J. C., Annable, L., Audet, N., 1996. Alexithymia in substance abusers - Persistence and correlates of variance. American Journal on Addictions 5, 32-39.

Porcelli, P., Bagby, R.M., Taylor, G.J., De Carne, M., Leandro, G., Todarello, O., 2003. Alexithymia as predictor of treatment outcome in patients with functional gastrointestinal disorders. Psychosomatic Medicine, 65 (5), 911-918.

Roberts, B. W., DelVecchio, W. F., 2000. The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. Psychology Bulletin 126, 3-25.

Roberts, B. W., Walton, K. E., Viechtbauer, W., 2006. Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. Psychology Bulletin 132, 1-25.

Rosenblum, A., Cleland, C., Magura, S., Mahmood, D., Kosanke, N.,Foote, J., 2005. Moderators of effects of motivational enhancements to cognitive behavioral therapy. American Journal of Drug and Alcohol Abuse 31, 35-58.

Rufer, M., Hand, I., Braatz, A., Alsleben, H., Fricke, S.,Peter, H., 2004. A prospective study of alexithymia in obsessive-compulsive patients treated with multimodal cognitive-behavioral therapy. Psychotherapy and Psychosomatics 73, 101-106.

Rufer, M., Ziegler, A., Alsleben, H., Fricke, S., Ortmann, J., Bruckner, E., Hand, I.,Peter, H., 2006. A prospective long-term follow-up study of alexithymia in obsessive-compulsive disorder. Comprehensive Psychiatry 47, 394-398.

Saarijarvi, S., Salminen, J. K., Tamminen, T., Aarela, E., 1993. Alexithymia in psychiatric consultation-liaison patients. General Hospital Psychiatry 15, 330-333.
Saarijarvi, S., Salminen, J. K.,Toikka, T., 2006. Temporal stability of alexithymia over a five-year period in outpatients with major depression. Psychotherapy and Psychosomatics 75,107-112.
Sifneos, P. E., 1973. The prevalence of "alexithymic" characteristics in psychosomatic patients. Psychotherapy and Psychosomatics 22 (2), 255-262.
Spek, V., Nyklicek, I., Cuijpers, P.,Pop, V., 2008. Alexithymia and cognitive behaviour therapy outcome for subthreshold depression. Acta Psychiatrica Scandinavica 118, 164-167.
Speranza, M., Loas, G., Wallier, J.,Corcos, M., 2007. Predictive value of alexithymia in patients with eating disorders: a 3-year prospective study. Journal of Psychosomatic Research 63, 365-371.
Stingl, M., Bausch, S., Walter, B., Kagerer, S., Leichsenring, F.,Leweke, F., 2008. Effects of inpatient psychotherapy on the stability of alexithymia characteristics. Journal of Psychosomatic Research 65, 173-180.
Taylor, G. J., Bagby, R. M., Parker, J. D. A., 1997. Disorders of affect regulation. Alexithymia in medical and psychiatric illness. Cambridge university press, Cambridge.
Thorberg, F. A., Young, R. M., Sullivan, K. A.,Lyvers, M., 2009. Alexithymia and alcohol use disorders: A critical review. Addictive Behaviours 34, 237-245.
van Rossum, L. G. M., Laheij, R. J. F., de Doelder, M. S., de Jong, C. A. J., Jansen, J., 2004. Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research 129, 107-112.
Vorst, H. C. M., Bermond, B., 2001. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. Personality and Individual Differences 30, 413-434.
Wilberg, T., Karterud, S., Pedersen, G., Urnes, O.,Costa, P. T., 2009. Nineteen-month stability of Revised NEO Personality Inventory domain and facet scores in patients with personality disorders. Journal of Nervous and Mental Disorders 197, 187-195.
World Health Organization, 1992. ICD-10 Classifications of Mental and Behavioural Disorder: Clinical Descriptions and Diagnostic Guidelines. Geneva. World Health Organisation.
Ziolkowski, M., Gruss, T., Rybakowski, J.K., 1995. Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence? Psychotherapy and Psychosomatics 63, 169-173.

Chapter 5

Alexithymia in patients with substance use disorders: state or trait?**

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Abstract

Previous research on substance use disorders (SUD) has yielded conflicting results concerning whether alexithymia is a state or trait, raising the question of how alexithymia should be addressed in the treatment of SUD patients. The absolute and relative stabilities of alexithymia were assessed using the Toronto Alexithymia Scale (TAS-20) and its subscales. In total, 101 patients with SUD were assessed twice during a 3-week inpatient detoxification period while controlling for withdrawal symptoms and personality disorder traits. The relative stability of the total TAS-20 and subscales was moderate to high but showed remarkable differences between baseline low, moderate, and high alexithymic patients.

A small reduction in the mean levels of the total TAS-20 scores and those of one subscale revealed the absence of absolute stability. The levels of alexithymia were unrelated to changes in withdrawal, including anxiety- and depression-like symptoms. The differences between low, moderate, and high alexithymic patients in terms of the change in alexithymia scores between baseline and follow-up indicated a strong regression to the mean. The findings suggest that alexithymia in SUD-patients as measured using the TAS-20 is both a state and trait phenomenon and does not appear to be related to changes in anxiety- and depression-like symptoms.

Keywords: Alexithymia; substance use disorder; absolute stability; relative stability.

Introduction

Alcohol misuse is an important public health problem that is related to mortality, reduced economic productivity, and other serious health-related issues (Ezzati et al., 2002; Smit et al., 2006). The abuse of and addiction to substances, including alcohol and nicotine, cost the USA nearly 600 billion dollars a year in medical, economic, criminal, and social expenses (Harwood, 2000; Office of National Drug Policy, 2004). Therefore, obtaining insight into the risk factors of substance use disorders (SUD) is important for developing novel methods to prevent and reduce substance-related harm.

Alexithymia may be a risk factor for SUD, particularly in the context of alcohol use disorders (AUD) (Taylor et al., 1997). Alexithymia is considered to be a deficit in emotion processing. More specifically, characteristics include difficulty identifying and describing feelings as well as discriminating between feelings and physical sensations. Individuals with alexithymia also show deficits in externally oriented thinking and are limited in their ability to fantasize or use their imagination (Sifneos, 1973). Overall, 45-67% of patients with SUD exhibit alexithymia (Taylor et al., 1997; Thorberg et al., 2009). There are indications that frontal lobe functioning is associated with alexithymia (Lyvers et al., 2011), and the association between alexithymia and alcohol use is mediated by anxious attachment (Thorberg et al., 2011a), alcohol expectancy (Thorberg et al., 2011b), and drinking motives (Bruce et al., 2012).

Early findings demonstrated a negative association between alexithymia and treatment-related outcomes, particularly in patients with AUD (Ziolkowski et al., 1995; Loas et al., 1997; Cleland et al., 2005). In 3 recent studies, alexithymia was unrelated to abstinence, attrition, or changes in AUD- or SUD-related problems following treatment (de Haan et al., 2011; de Haan et al., 2012b; Stasiewicz et al., 2012). However, alexithymia was associated with poor emotion regulation skills (Stasiewicz et al., 2012), which predict post-treatment levels of alcohol use (Berking et al., 2011) and may increase the risk for relapse (Bandura et al., 2003). Therefore, alexithymia remains a relevant problem in optimizing the treatment of SUD, particularly in patients with AUD.

An important clinical question is whether alexithymia is a mental state or a stable personality trait. In their review on alexithymia and SUD, Taylor et al. (1997) assumed that affective distress may contribute a state-dependent component to alexithymia. However, the high rates of alexithymia in SUD-patients in a stable phase of rehabilitation and with longlasting abstinence suggest an underlying trait structure as well (Taylor et al., 1997). In statistical terms, a stable personality trait is characterized by absolute and relative stability. Absolute stability refers to mean-level differences over time, which indicate whether and in which direction an entire sample or population is changing (Caspi et al., 2005; Roberts et al., 2006). However, individual differences in change reflect deviations from the overall mean level patterns. Relative stability, which is defined as the extent to which relative differences between subjects remain the same over time (Roberts and DelVecchio, 2006), is therefore an even more important indication of the stability of a trait. Relative stability is reflected in the strength of test-retest correlations.

Previous research revealed that alexithymia was not a stable personality trait in a sample of patients with SUD following inpatient treatment (de Haan et al., 2012a). A strong "regression to the mean" was found, indicating that low alexithymic patients with SUD at baseline scored higher at follow-up and high alexithymic patients at baseline scored lower at follow-up. The results also revealed large differences in relative stability between low, moderate, and high alexithymic patients with SUD. Both findings argue against alexithymia as a stable personality trait (de Haan et al., 2012a)

We discussed in a previous article that absolute and relative stability in total TAS-20 or TAS-20 factor scores vary for different populations, including the general population and patients with diverse psychiatric disorders, which causes an extensive debate on the state versus trait concept of alexithymia in the literature (de Haan et al., 2012a).

Other alexithymia stability studies in SUD or AUD populations were conducted with detoxifying or recently detoxified patients and reported conflicting results. One study found a relative change of alexithymia in newly abstinent alcoholic inpatients, suggesting that alexithymia in SUD-patients is a state phenomenon (Haviland et al., 1988). In this study the change in alexithymia was not related to a change in depression-like symptoms, measured with the Beck Depression Inventory (BDI) (Beck and Steer, 1987) (Haviland et al., 1988). However, in a subsequent study, Haviland et al (1994) demonstrated with path analyses that a state of alexithymia in SUD-patients can result from severe anxiety- and depression-like symptoms, measured with the State-Trait Anxiety Inventory (STAI) (Spielberger, 1983) and the BDI. Another study (Pinard et al., 1996) reported no changes in the mean levels following detoxification and concluded that alexithymia is a stable trait. Only Haviland et al. (1988) investigated absolute and relative stability simultaneously. More recently, an absolute reduction in alexithymia was observed in patients with AUD during withdrawal, with high relative stability over a brief time period (de Timary et al., 2008). Alexithymia was defined in this previous study as a stable personality trait rather than a state-dependent phenomenon given the limited influence of anxiety- and depression-like symptoms and the observed high relative stability (de Timary et al., 2008). Anxiety- and depression-like symptoms were measured with the STAI and BDI. However, no data were available to examine differences in absolute and relative stability between low, moderate, and high alexithymic patients, rendering it impossible to detect a regression to the mean, in contrast to de Haan et al.'s (2012a) findings, which phenomenon was also suggested by Haviland et al. (1988).

In the aforementioned studies on alexithymia during or directly after detoxification, anxiety- and depression-like symptoms were probably SUD (including withdrawal) induced. However, no investigation had been reported if these anxiety- and depression-like symptoms derived partly from anxiety and depressive disorders independent from SUD. Neither was investigated, although suggested, if these anxiety- and depression-like symptoms were indeed part of or related to withdrawal symptoms.

During a detoxification period, withdrawal symptoms, including stress, anxiety-, and depression-like symptoms, change in severity and may affect the mental state of many patients with SUD. Therefore, a detoxification period appears to be a good opportunity to determine whether alexithymia is a state versus a trait in patients with SUD. A change in the absolute or mean level stability of alexithymia during detoxification indicates the sensitivity of alexithymia to a state, such as withdrawal, that affects the entire patient group. However, patients with SUD can be differentially affected by withdrawal symptoms during detoxification, a fact that can be captured by measures of relative stability. A strong personality characteristic or stable trait, which is best reflected in a high degree of relative stability, should be relatively independent of state factors.

A strong relationship with state factors, such as anxiety- or depression-like symptoms, and a low relative stability of alexithymia would support a more state-dependent phenomenon and argue against alexithymia as an autonomous trait-like SUD vulnerability factor (de Timary et al., 2008). This means that addressing alexithymia in the treatment of patients with SUD would not be as necessary if alexithymia were defined primarily as a state-dependent phenomenon that occurs in response to stress, anxiety-, or depression-like symptoms. The treatment could then be focused specifically on the stress, anxiety, and depression components. In case alexithymia is a state-dependent phenomenon independent from other symptoms or disorders, information on the temporary character could be provided to patients to help them to overcome this period. However, if alexithymia is an independent, stable personality trait, it would be important to adjust our cognitive behavioral treatment (CBT) interventions to alexithymic patients with SUD with better treatment results as an expected outcome. In CBT, patients are expected to differentiate, name, and describe difficult experiences, such as cravings, withdrawal symptoms, anxiety, and mood states, which is difficult for patients with alexithymia.

Given the different results regarding the stability of alexithymia in detoxifying or recently detoxified SUD populations (Haviland et al., 1988; Pinard et al., 1996; de Timary et al., 2008), as well as the absence of a description of the differences between low, moderate, and high alexithymic patients, we conducted a prospective study of the stability of alexithymia to examine the stability of alexithymia during detoxification while controlling for withdrawal symptoms and personality disorder traits. These controls were included given that withdrawal symptoms are supposed and personality disorder traits have been related to alexithymia in patients with alcoholism (De Rick & Vanheule, 2007; de Timary et al., 2008).

To address our hypothesis that alexithymia is primarily a stable trait in patients with SUD, we formed the following sub-hypotheses: 1) High relative stability of alexithymia scores would be found using the Toronto Alexithymia Scale (TAS-20). 2) Only slight differences in the degree of relative stability would be observed between low, moderate, and high alexithymic patients. This hypothesis was added because of previous findings regarding the differences between these 3 groups (de Haan et al., 2012a). 3) No change in the mean level of alexithymia scores

would be observed (indicating absolute stability). 4) Few differences would be found between low, moderate, and high alexithymic patients with respect to pre-post changes in the mean level of alexithymia scores, indicating a limited regression to the mean. Additionally, to address our hypothesis of high relative and absolute stabilities, we expected to find that 5) baseline alexithymia, rather than state conditions, such as withdrawal symptoms (which are associated with anxiety- and depression-like symptoms), would predict the variance in follow-up alexithymia levels.

With respect to our alternative hypothesis that alexithymia is (partially) a state phenomenon, we predicted that 6) the change in alexithymia scores would be related to a change in withdrawal symptoms, including anxiety- and/or depression-like symptoms.

Methods

Participants

Between June and September 2004, 131 inpatients with SUD who were hospitalized for detoxification from alcohol and/or other substances for 3 or 4 weeks were recruited from 3 addiction treatment centers in the Netherlands. During the detoxification process 30 patients dropped out too early and did not participate in the follow-up part of the study. The exclusion criteria included being under the age of 18, having insufficient knowledge of the Dutch language, having severe psychiatric co-morbidity (psychotic and severe mood disorders), undergoing a recent change in medication (except for detoxification), and providing no signed informed consent. All patients were diagnosed according to the DSM-IV as having 1 or more SUD and were abusing substances until the day of admission. Alcohol was the preferred substance of 41% of patients, 6% preferred cocaine or other stimulants, 43% were poly-substance users, and 10% preferred other substances.

Procedure

During hospitalization, patients with SUD were detoxified with benzodiazepines and/or methadone. The maximum time span of the detoxification was 21 days. The treatment consisted of medical and nursing support aimed at completing the detoxification period without a psychotherapeutical intervention. Patients' urine was routinely analyzed twice per week and if alcohol or drug use was suspected.

During the research period, the patients were assessed twice (baseline and follow-up) using the TAS-20 and Subjective Withdrawal Scale (SWS) at a maximum interval (mean in days = 14.1, SD = 3.3) of 3 weeks to obtain the highest difference in withdrawal symptoms. A baseline assessment that included the Assessment of DSM-IV Personality Disorders (ADP-IV) Questionnaire (Schotte et al., 1998) was conducted within 3 days following hospitalization for detoxification.

The patients participated voluntarily after providing written informed consent. A student with a master's degree in medicine performed the interviews.

Instruments

Alexithymia was assessed using the Dutch version of the TAS-20 (Kooiman et al., 2002). The TAS-20 is the most frequently used assessment instrument for alexithymia and includes 3 factors: (1) difficulty in identifying feelings (DIF), (2) difficulty in describing feelings (DDF), and (3) externally oriented thinking (EOT) (Bagby et al., 1994). Each scale item is measured on a 5-point Likert scale that ranges from "completely disagree" to "completely agree". The TAS-20 demonstrated good test-retest reliability (r = 0.77) over a 3-week interval (Bagby et al., 1994). The TAS-20 can be analyzed in its entirety or separately using these 3 components. Alexithymia may be conceptualized as a continuous (Parker et al., 2008) or categorical variable. Taylor et al. (1997) suggested that a total score of 61 and above indicates alexithymia and that a score of 51 and below indicates low or an absence of alexithymia. A score between 52 and 60 represents a moderate degree of alexithymia. The internal consistency of the total Dutch TAS-20, DIF, and DDF in students and psychiatric outpatients varied between $\alpha = 0.67$ and $\alpha = 0.85$; however, the internal consistency of the EOT in psychiatric patient and general population samples was lower ($\alpha = 0.52 - 0.66$). The test-retest reliability in psychiatric outpatients over a 3-month interval was satisfactory for the total TAS-20 ($r = 0.74$) and DIF-factor ($r = 0.71$) but was less so for the DDF- ($r = 0.68$) and EOT-factors ($r = 0.66$) (Kooiman et al., 2002).

The type of SUD was assessed using the Composite International Diagnostic Interview, Substance Abuse Module (CIDI-SAM) at baseline (Compton et al., 1996). The CIDI-SAM is an expanded and more detailed version of the substance use sections of the CIDI. The interview questions address the diagnostic criteria of DSM-IV-TR and ICD-10 psychoactive SUD.

Based on the European Addiction Severity Index (Hendriks et al., 1989), a general information questionnaire was developed to assess patient baseline sociodemographic characteristics and substance use.

The SWS (SOS in Dutch) has 33 items that are measured on a 5-point Likert scale to assess subjective withdrawal symptoms. The SWS was developed by combining different withdrawal symptoms for all substances covered by the DSM-IV. The Subjective Opiate Withdrawal Scale (SOWS), a component of the SWS, consists of 16 SWS items and has been validated in a Dutch sample of opioid dependent patients (Dijkstra et al., 2007). For the present study, we deleted 8 items for which no significant differences were observed (paired sample t-tests) between the 2 time points of assessment and therefore did not qualify as withdrawal symptoms. The remaining 25 SWS items comprised all 16 of the SOWS items. We then conducted a principal component analysis on these 25 items using orthogonal rotation (varimax). The Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy was 0.86, and all of the KMO values for individual items were > 0.77 using Bartlett's test of sphericity (χ^2 (300) = 1711.93, $P < 0.0001$). The 6 components had

eigenvalues greater than Kaiser's criterion of 1 and together explained 65.1% of the variance; thus, these components were retained in the final analysis. One component represented a depression factor (i.e., "feeling depressed", "being inert", "being listless or drowsy", and "being tired"), and another component represented an anxiety factor (i.e., "feeling anxious", "feeling restless", "having insomnia", and "having to keep moving"). Altogether, these 2 factors explained 14.3% of the variance and were particularly notable given their relationships with alexithymia (Haviland et al., 1988, 1994). An oblique rotation indicated identical factors. We referred to these factors as the SWS-depression and SWS-anxiety factors. The reliability scores were good to excellent, and the Cronbach's α values were 0.92, 0.73, and 0.74 for the SWS-total, SWS-depression, and SWS-anxiety factors, respectively. No multicollinearity was observed for the 25 items of the SWS-total, SWS-depression, or SWS-anxiety factors. The SWS-total and SWS-anxiety components exhibited the highest correlation ($r = 0.74$, $P < 0.001$). The SWS-depression factor demonstrated a high correlation with the SWS-total ($r = 0.65$, $P < 0.001$) and a moderate correlation with the SWS-anxiety factor ($r = 0.37$, $P < 0.001$).

The ADP-IV is a Dutch self-report instrument of DSM-IV personality disorders (Axis II). This instrument includes 94 items that are measured on a 7-point Likert scale that ranges from "completely disagree" to "completely agree". For each DSM-IV criterion, the ADP-IV assesses its typicality and the accompanying distress and impairment. The item format allows for dimensional and categorical diagnostic evaluations of the 10 DSM-IV personality disorders and an additional depressive personality disorder. In the present study, the total (composite) dimensional score for all of the personality disorder items, dimensional scores for the items of the DSM-IV clusters A, B, and C, and the depressive personality subscale were used. The ADP-IV and its subscales have been shown to have good internal consistency and concurrent validity in previous research that was conducted with patient and general population samples (Schotte et al., 1998, 2004).

Statistical analysis

Socio-demographic, substance use, and personality characteristics were associated with the TAS-20 and TAS-20 factors as continuous and categorical variables. To address hypotheses 1 and 2, intraclass correlations were used to assess the relative stability of TAS-20 and TAS-20 factor scores between baseline and follow-up for both the total sample and separate levels of alexithymia. This was performed using 95% confidence intervals for low, moderate, and high alexithymic patients.

With regard to hypothesis 3, differences in the absolute stability of the TAS-20 and TAS-20 factor scores between baseline and follow-up were tested using paired t-tests. Changes in baseline and follow-up SWS-total, SWS-anxiety, and SWS-depression scores were also examined using the same procedure. Cohen's $d = (\mu 1 - \mu 2) / \sigma 1$ was calculated to determine the effect sizes for significant variables. To address hypothesis 4 and assess regression to the mean, pre-post differences in absolute stability between low, moderate, and high alexithymic patients were tested by comparing the different scores using analysis of variance (ANOVA) and post-hoc analyses.

To further assess relative stability, especially the influence of personality and state conditions, such as withdrawal symptoms (hypothesis 5), multivariate linear regression analyses were performed using the TAS-20 and TAS-20 factor scores at follow-up as the dependent variables. The predictor variables, which were based partially on previous research (Haviland et al., 1988, 1994; Rosenblum et al., 2005; Mattila et al., 2006; De Rick & Vanheule, 2007), were age, gender, SWS-total, SWS-anxiety, SWS-depression, ADP-IV-total, ADP-IV-depression, and total baseline TAS-20 or TAS-20 factor scores. The variables with a $P < 0.2$ in the univariate analyses (correlations between predictors and the different dependent variables) were entered into a full multivariate model. Subsequently, the non-significant variables were sequentially removed until the R-squared value changed by more than 10% when compared with the previous analysis that included the last removed variable. We have used this same procedure in previous research (de Haan et al., 2012a).

To assess the extent to which significant changes in the total TAS-20 or TAS-factor scores could be accounted for by withdrawal-related variables, multivariate linear regression models were performed using the relevant TAS-20 "change scores" (baseline minus follow-up scores) as the dependent variable (hypothesis 6). For these analyses, the predictor variables were age, gender, ADP-IV-total, ADP-IV-depression, the "change scores" of SWS-total, SWS-depression, SWS-anxiety, and the total baseline TAS-20 or TAS-20 factor scores. The variables with a $P < 0.2$ in the univariate analyses were entered into a full multivariate model. Subsequently, non-significant variables were removed sequentially removed until the R-squared value changed by more than 10%.

All of the statistical tests were conducted using SPSS for Windows (release 16.0). All of the analyses were 2-sided, with a P value ≤ 0.05 indicating statistical significance.

Results

Baseline characteristics (Table 1)

TAS-20 baseline data were available for 130 patients. Fifty-five patients (42.3%) were highly alexithymic, 35 (26.9%) were moderately alexithymic, and 40 (30.8%) scored low on alexithymia. The mean baseline TAS-20 score for all of the patients was 57.9 (SD = 12.9), with no significant difference between men (mean = 57.7, SD = 13.6) and women (mean = 58.5, SD = 10.1). High alexithymic patients did not differ from low or moderate alexithymic patients in terms of gender, age, country of birth, relationship status, employment, education, or the type of substance dependence, according to DSM IV. No correlation was observed between age and alexithymia (total TAS-20) when measured as a continuous variable (r = -0.01, P = 0.88). High alexithymic patients exhibited on the EuropASI a higher preference for poly-substance use compared with moderate and low alexithymic patients [$\chi^2(6) = 14.55$, $P = 0.02$]. High alexithymic patients scored higher on the total SWS-scale and the SWS-anxiety and SWS-depression components compared

with moderate and low alexithymic patients. This result is consistent with the correlations between these scales and the TAS-20 measured as a continuous variable (SWS: r = 0.40; SWS-anxiety: r = 0.40: SWS-depression: r = 0.31, all $P < 0.001$). For all of the ADP-IV dimensional personality disorder measures, high alexithymic patients scored higher compared with low alexithymic patients, and the total TAS-20 score was also related to these measures (ADP-IV total: r = 0.44; cluster A: r = 0.42; cluster B: r = 0.38; cluster C: r = 0.38, all $P \leq 0.001$; depressive personality: r = .27, P = 0.007).

Follow-up data

TAS-20 data were available for 101 patients 2 – 3 weeks after follow-up. The dropout rate [$\chi^2(2)$ = 4.68, P = 0.10] did not differ between the baseline low, moderate, and high alexithymic patients.

Relative stability (hypotheses 1 and 2)

The ICC (Intraclass Correlation Coefficient) between baseline and follow-up was 0.64 for the total TAS-20, 0.59 for DIF, 0.57 for DDF, and 0.44 for EOT (all $P < 0.001$). The ICCs for the total TAS-20 and factor scores differed for patients with low, moderate, or high alexithymia, although the 95% confidence intervals overlapped. The highest ICC was observed for low alexithymic patients (range: 0.31 - 0.55; all $P < 0.05$). Moderate alexithymic patients had non-significant ICC values (range: -0.09 - 0.28), and high alexithymic patients had significant (except for the total TAS-20) ICCs (range: 0.25 - 0.34) (Table 2).

Table 1. *Baseline characteristics for low, moderate, and high alexithymic patients (n=130).*

Characteristics	High alexithymic (TAS > 60) 42.3% (*n* = 55)	Moderate alexithymic (51 < TAS < 61) 26.9% (*n* = 35)	Low alexithymic (TAS < 52) 30.8% (*n* = 40)	χ^2	*F*	*P*
Gender % (*n*)				0.85		0.65
Male	40.6(41)	26.7(27)	32.7(33)			
Female	48.3(14)	27.6(8)	24.1(7)			
Age (years) M(SD)	39.0(11.6)	39.5(11.7)	39.5(10.7)		0.03	0.97
Country of birth % (*n*)				5.82		0.21
Netherlands	38.8(45)	28.4(33)	32.8(38)			
Other	62.9(9)	15.4(2)	15.4(2)			
Relationship % (*n*)				0.92		0.92
Married	47.1(16)	23.5(8)	29.4(10)			
Divorced/widowed	43.2(16)	24.3(9)	32.4(12)			
Never married	39.0(23)	30.5(18)	30.5(18)			
Employment % (*n*)				2.24		0.33
Employed	44.0(11)	16.0(4)	40.0(10)			
Unemployed	42.4(43)	29.4(30)	28.4(29)			
Education % (*n*)				5.14		0.27
Low/primary	47.5(29)	29.5(18)	23.0(14)			
Middle/secondary	41.7(20)	25.0(12)	33.3(16)			
High	27.8(5)	22.4(4)	50.0(9)			
Type of substance dependence %(*n*)				10.39		0.11
Not dependent	28.6(2)	28.6(2)	42.9(3)			
Only alcohol-dependent	29.8(14)	23.4(11)	46.8(22)			
Only drug-dependent	31.8(7)	36.4(8)	31.8(7)			
Alcohol- and drug-dependent	55.2(16)	31.0(9)	13.8(4)			
Years of alcohol use > 5 U M(SD) (*n*=98)	13.7(9.2)	13.2(9.3)	13.8(9.9)		0.03	0.97
Years of drug use M(SD) (*n*=98)	8.4(5.1)	8.1(5.5)	6.8(4.8)		0.87	0.42
Substance of preference % (*n*)				14.55		0.02
Alcohol	33.3(17)	25.5(13)	41.2(21)			
Cocaine/stimulants	25.0(2)	50.0(4)	25.0(2)			
Poly-substance	58.5(31)	22.6(12)	18.9(10)			
Other	16.7(2)	33.4(4)	50.0(6)			
SWS M(SD)						
Total[1]	60.0(20.2)	49.3(13.5)	44.9(17.4)		9.05	<0.001
SWS-depression[1]	11.5(3.5)	9.4(3.5)	8.6(4.7)		6.84	0.002
SWS-anxiety[1]	11.8(4.2)	9.0(3.4)	8.1(3.6)		12.30	<0.001
ADP-IV M(SD)	*n*=39	*n*=28	*n*=35			
Total[2]	275.8(73.5)	248.3(57.3)	208.5(66.9)		9.32	<0.001
Cluster A[2]	78.7(24.6)	69.0(15.6)	58.7(20.6)		8.33	<0.001
Cluster B[2]	121.0(34.7)	108.8(29.4)	89.9(32.8)		8.44	<0.001
Cluster C[2]	76.1(25.4)	70.4(21.6)	59.9(19.8)		4.83	0.01
Depressive Personality[2]	23.9(9.7)	23.0(9.3)	18.8(8.8)		3.04	0.05

Notes: M = Mean; SD = Standard Deviation; SWS = Subjective Withdrawal Symptoms; ADP-IV = Assessment of DSM-IV Personality Disorders Questionnaire; [1] post-hoc comparisons: Tukey's HSD: high alexithymics > moderate and low alexithymics

[2] post-hoc comparisons: Tukey's HSD: high alexithymics > low alexithymics.

Table 2. *Intraclass correlations (ICC) for total TAS-20 and TAS-20 components between baseline and follow-up for low, moderate and high baseline alexithymic patients.*

ICC	low alexithymia* (*n*=35)	moderate alexithymia* (*n*=28)	high alexithymia* (*n*=38)
Total TAS-20	.31 (-.02 / .58) (0.03)	.16 (-.21 / .50) (0.20)	.25 (-.07 / .53) (0.06)
DIF	.55 (.27 / .74) (< 0.001)	-.09 (-.44 / .29) (0.68)	.28 (-.04 / .55) (0.04)
DDF	.46 (.16 / .69) (0.002)	.28 (-.09 / .59) (0.07)	.34 (.03 / .59) (0.02)
EOT	.35 (.03 / .61) (0.02)	.12 (-.26 / .46) (0.27)	.32 (.01 / .58) (0.02)

Note: TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; ICC = Intraclass Correlation; * = *(95% CI) (p)*

Absolute stability and regression to the mean (hypotheses 3 and 4)

We observed reductions in the total TAS-20 and DIF scores between baseline and follow-up, with small effect sizes; the DDF and EOT scores did not change (Table 3). For the SWS variables, the reductions at follow-up were all significant, and the effect sizes varied from moderate (d = 0.63 for SWS-depression and d = 0.50 for SWS-anxiety) to large (d = 0.80 for SWS-total) (Table 3).

Table 3. *TAS-20 total and component scores and SWS-scores for baseline and follow-up (n = 101): paired sample t-tests.*

Severity-scores Mean (SD)	Baseline	Follow-up	*T*	*p*	*d* (Cohen)
Characteristics					
TAS-20	57.3 (13.2)	55.2 (12.1)	1.99	0.05	0.16
DIF	20.7 (6.7)	18.7 (6.2)	3.65	<0.001	0.30
DDF	15.4 (4.7)	15.1 (4.3)	0.64	0.53	0.06
EOT	21.2 (5.3)	21.4 (4.8)	-0.35	0.73	-0.04
SWS-total	51.9 (19.3)	36.4 (10.7)	8.39	<0.001	0.80
SWS-depression	9.6 (4.2)	7.0 (3.0)	6.10	<0.001	0.63
SWS-anxiety	9.4 (4.0)	7.4 (3.4)	4.75	<0.001	0.50

Note: TAS-20 = "Toronto Alexithymia Scale"; DIF = "Difficulty Identifying Feelings"; DDF = "Difficulty Describing Feelings"; EOT = "Externally Oriented Thinking"; SWS = Subjective Withdrawal Scale.

Highly significant differences emerged between low, moderate, and high alexithymic patients in the mean change scores for the TAS-20 and TAS-factors (Table 4). Post-hoc analyses indicated that the high alexithymic patients differed from the low alexithymic patients in their change scores for all of the TAS-20 variables and from the moderate alexithymic patients in the change scores for the EOT-factor. Low alexithymic patients differed from the moderate alexithymic patients in the total TAS-20 and DDF-factor scores.

The total TAS-20, DDF, and EOT scores for low alexithymic patients increased at follow-up, whereas a significant reduction was observed only for the DIF-factor in the moderate alexithymic patients and no significant change was found for the total TAS-20, DDF and EOT scores. However, all of the TAS-variables for the high alexithymic patients decreased at follow-up.

Table 4. *ANOVA on mean difference scores for TAS-20 total and factor scores, SWS total and factor scores (bas moderate (51 < TAS-20 < 61) and high (TAS-20 > 60) alexithymic patients (at baseline). Total TAS-20 and factor s a better overview of the changes.*

	low alexithymic (1)	moderate alexithymic (2)	high alexithymic (3)
Characteristics	M (SD) (95% CI)* (*n*=35)	M (SD) (95% CI)* (*n*=28)	M (SD) (95% CI)* (*n*=3
Total TAS-20	-4.8 (9.1) (-7,8/-1,8) (43.2 / 47.9)	2.8 (8.2) (-0,2/5,8) (56.4 / 53.6)	7.9 (10.0) (4,7/11,1) (7
DIF	-0.3 (4.7) (-1,9/1,3) (14.6 / 14.9)	2.3 (5.4) (0,3/4,3) (20.2 / 17.9)	4.0 (5.8) (2,2/5,8) (26.7
DDF	-1.8 (3.7) (-3,0/-0,6) (11.1 / 12.9)	1.2 (4.5) (-0,5/2,9) (16.1 / 14.9)	1.5 (3.8) (0,3/2,7) (18.8
EOT	-2.7 (5.1) (-4,4/-1,0) (17.4 / 20.1)	-0.6 (5.2) (-2,5/1,3) (20.1 / 20.7)	2.4 (4.7) (0,9/3,9) (25.4
SWS-total	11.6 (15.5) (6,5/16,7)	9.1 (12.3) (4,5/13,7)	23.7 (22.0) (16,7/30,7)
SWS-D	2.1 (4.6) (0,6/3,6)	1.3 (3.0) (0,2/2,4)	4.2 (4.5) (2,8/5,6)
SWS-A	1.6 (3.8) (0,5/2,9)	0.8 (3.6) (-0,5/2,1)	3.3 (4.8) (1,8/4,8)

Note: TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feel = Subjective Withdrawal Scale; SWS-D = Subjective Withdrawal Scale – Depression; SWS-A = Subjective Withdr M TAS-20 follow-up)

The results of an ANOVA examining the mean change scores of the SWS variables indicated that the scores of high alexithymic patients changed more than the scores of moderate alexithymic patients; high alexithymic patients changed more than low alexithymic patients only on the SWS-total scale. All of the SWS variables were significantly reduced from baseline to follow-up, except for the SWS-anxiety score in moderate alexithymic patients (Table 4).

Estimating the relative and absolute stability of alexithymia while controlling for confounders (hypothesis 5)

The SWS-depression score at follow-up (r = 0.24) contributed less to the TAS-20 at follow-up than to the TAS-20 at baseline (r = 0.64). The DIF (baseline) score contributed more (r = 0.50) to the variance in the DIF-factor at follow-up compared with SWS-depression (follow-up) (r = 0.21) or the ADP-IV total score (r = 0.31). The ADP-IV contributed less to the variance in the DDF-factor at follow-up (r = 0.26) compared with the baseline DDF score (r = 0.48). The total SWS score at baseline (r = 0.20) contributed less to the variance in the EOT-factor score at follow-up than to the EOT-factor at baseline (r = 0.39) (Table 5).

Table 5. *Multivariate linear regression analysis predicting the TAS-20 total and factor scores at follow-up (FU) from the SWS-total, SWS-depression, and SWS-anxiety at baseline and follow-up, gender, age, ADP-IV-total, and ADP-IV-depression and TAS-20 at baseline. Non-significant variables were removed until the R-squared changed by more than 10% (n=101).*

Factors	β(=r)	p	R^2	F change	p
Total TAS-20					
			.48	45.64	<0.001
SWS-depression at FU	.24	0.001			
TAS-20 at Baseline	.64	<0.001			
DIF					
			.55	39.27	<0.001
SWS-depression at FU	.21	0.004			
ADP-IV-total	.31	<0.001			
DIF at Baseline	.50	<0.001			
DDF					
			.38	30.34	<0.001
ADP-IV-total	.26	0.003			
DDF at Baseline	.48	<0.001			
EOT					
			.23	14.98	<0.001
SWS-total at Baseline	.20	0.03			
EOT at Baseline	.39	<0.001			

Note: TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; SWS = Subjective Withdrawal Scale; ADP-IV = Assessment of DSM-IV Personality Disorders Questionnaire.

Relation between the change in alexithymia and withdrawal-related variables (hypothesis 6)

The change score (i.e., from baseline to follow-up) of the total TAS-20 was related to the change in the SWS-depression (r = 0.24, P = 0.02) but not the SWS-total (r = 0.13, P = 0.21) or SWS-anxiety (r = 0.15, P = 0.13) scores. The DIF-factor change score was correlated with changes in the SWS-depression (r = 0.22, P = 0.02) and SWS-anxiety (r = 0.21, P = 0.03) scores but not the SWS-total (r = 0.19, P = 0.06) score.

In the regression models that used the total TAS-20 and DIF-factor "change scores" as the dependent variables, the ADP-IV total score contributed to the variance in the DIF "change score" (r = -0.40). The baseline total TAS-20 and DIF-factor explained large portions of the variance (r = 0.51 for the total TAS-20 and 0.66 for DIF) in the changes of the total TAS-20 and DIF-factor scores (Table 6).

Table 6. *Multivariate linear regression analysis predicting the TAS-20 "change" (baseline – follow-up) total and DIF-factor scores for patients from the SWS-total, SWS-depression, and SWS-anxiety "change scores" (baseline – follow-up) and gender, age, ADP-IV-total, and ADP-IV-depression and TAS-20 at baseline. Non-significant variables were removed until the R-squared changed by more than 10% (n=101).*

Factors	β(=r)	p	R^2	F change	p
Total TAS-20					
TAS-20 at Baseline	.51	<0.001	.26	34.37	<0.001
DIF					
			.39	31.49	<0.001
ADP-IV-total	-.40	<0.001			
DIF at Baseline	.66	<0.001			

Note: TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; SWS = Subjective Withdrawal Scale; ADP-IV = Assessment of DSM-IV Personality Disorders Questionnaire.

Discussion

In the present study, we observed moderate to high relative stability of the total TAS-20 and factor scores, with the lowest relative stability for the EOT-factor (hypothesis 1). Although large differences were observed in the relative stability of the baseline scores for low, moderate, and high alexithymic patients, these differences were not found to be significant (hypothesis 2). A mean reduction was observed in the total TAS-20 and DIF-factor scores indicating no absolute stability (hypothesis 3). Large differences between baseline low, moderate, and high alexithymic patients in alexithymia score changes also indicated no absolute stability and a strong regression to the mean (hypothesis 4). Baseline alexithymia scores were better predictors of follow-up alexithymia scores than withdrawal-related variables, including anxiety- and depression-like symptoms (hypothesis 5); however, changes in alexithymia were unrelated to withdrawal symptoms (hypothesis 6).

Relative stability

The results indicated high relative stability of the TAS-20 total and DIF- and DDF-factor scores but a moderate relative stability of the EOT-factor score. de Timary et al. (2008) reported slightly higher correlations in their 2-week alcohol detoxification study and also reported the lower score for the EOT-factor. These results are perhaps due to the low reliability of the EOT-factor, as was demonstrated in earlier studies (Kooiman et al., 2002). To our knowledge, no clear definition is provided in the literature as to what constitutes a high rate of relative stability, particularly in relation to the time between the assessment points. Compared with the test-retest reliability of $r = 0.77$ (Bagby et al., 1994) as a theoretical maximum and in accordance with most studies on this topic (de Haan et al., 2012a), an ICC or Pearson correlation moment of 0.6 is considered to be high. However, whether this is sufficiently high for a stable personality construct over a time period of 2 – 3 weeks is debatable, because only 36% of the variance of the score after 2-3 weeks is explained by the baseline score.

The length of time between assessments has a known negative effect on relative stability, implying that larger changes occur as more time passes between assessments (Caspi et al., 2005). However, we argued previously (de Haan et al., 2012a) that differences in relative stability between the total TAS-20 and TAS-factors varied for different populations and did not exhibit a consistent relationship with the time between assessments. In addition to the alexithymia baseline scores, both state factors such as withdrawal symptoms (including anxiety- and depression-like symptoms) and trait-related ADP-IV-variables contributed little to the variance in the alexithymia scores at follow-up. Clearly, unidentified variables affect the change in and relative stability of alexithymia scores as measured using the TAS-20 instrument.

The differences in relative stability among the baseline low, moderate, and high alexithymic patients are consistent with our previous research using the TAS-20 in a detoxified SUD population with a much longer (6-month) time interval (de Haan et al., 2012a). In our present study, we observed that the DDF-factor had the lowest ICC for the total sample but the highest ICC at categorical levels in comparison with the total TAS, DIF, and EOT. In our previous study, we observed this result for the EOT rather than for the DDF-factor. We do not have a satisfactory explanation for these differences. We believe that these results argue against a stable personality construct of alexithymia in SUD populations. However, because the differences were not significant, the results are inconclusive. To our knowledge, no other studies have investigated the relative stability of these 3 levels of alexithymia.

Absolute stability

We observed the absolute stability of the DDF- (no gender differences) and EOT-factors but not the total TAS-20 and DIF-factors; however, the observed reduction was small, based on the low effect sizes, and the clinical relevance of these changes could therefore be questioned. This result contradicts the study of Pinard et al. (1996), who observed overall stability in a small sample ($n =$

21). In the study by de Timary et al. (2008), the EOT- and DDF-factors exhibited absolute stability, but only for men in the latter scores. De Timary et al. (2008) also reported a greater reduction in the total TAS-20 after 14 – 18 days (difference score = 4.1, Cohen's d = 0.38) compared with the reduction that we observed (difference score = 2.1, Cohen's d = 0.16) in 14 – 21 days. A larger decrease in depression- and anxiety-like symptoms was not responsible for this difference given that in both de Timary et al.'s (2008) and our study, depression- and anxiety-like symptoms did not contribute to the change in alexithymia when tested in multivariate models. The total ADP-IV score related negatively to changes in the DIF score. A greater number of personality disorder traits appear to hinder a reduction in the DIF-factor. The baseline degree of alexithymia predominantly explained the change in alexithymia scores.

Regression toward the mean

Our results demonstrated a clear difference between low, moderate, and high alexithymic patients in terms of the absolute stability of the total TAS-20 and TAS-20 component scores. The TAS-20 scores were strongly reduced in the high alexithymic patients. In low alexithymic patients, all of the TAS-20 scores increased, except for the DIF-factor. In the moderate patient group, the total TAS-20 and DIF- and DDF-factors exhibited a greater reduction compared with the low alexithymic patients. However, regarding the change between baseline and follow-up, only the DIF-factor was reduced significantly. A related change in stress, anxiety, and/or depression, as measured using the SWS-total and SWS-factors, could not explain these results. These results indicate that the apparent degree of absolute stability for the entire group is inconsistent with the clear lack of absolute stability that was observed when the group was subdivided into 3 degrees of alexithymia. This phenomenon appears to represent a "regression toward the mean", which we also observed in our previous study (de Haan et al., 2012a). Haviland et al. (1988) and Honkalampi et al. (2001) illustrated a shift from the categories of alexithymia at follow-up, combined with an absolute stability of TAS or TAS-20 scores. However, in the study of Honkolampi et al. (2001) this result may be explained by a related change in depression scores and Haviland et al. (1998) used the TAS, a less reliable previous version of the TAS-20. To our knowledge, no other studies of this topic have described such a phenomenon.

Roberts et al. (2006) demonstrated that personality traits do not stop changing over the course of an individual's life, a conclusion that is generally consistent with interactional models of personality development. Whether and how modifications in personality, which are perhaps facilitated by therapy or periods of abstinence, represent intrinsic maturational processes or reflect life experiences is debated (Wilberg et al., 2009). Patients with SUD often have lifestyles that are devastating to their physical and mental health and continuous fluctuations of intoxication and withdrawal from various substances. This instability may influence personality traits. One can therefore not exclude the possibility that a brief period of abstinence could serve as a catch-up period for certain normative changes in personality traits. Individual patients could react to this

process differently, which may be a tentative explanation for the difference in relative and absolute stability in patients with SUD compared with different subpopulations. However, the differences in stability that we observed between low, moderate, and high alexithymic patients with SUD are difficult to explain. This also applies to the differences that were found in stability between the 3 TAS-20 factors. Except for the change in the DIF-factor, that was related to personality disorder traits, no other variables, that were related to changes of the TAS-20 factors, could be detected.

The limitations of our study included measuring the change in depression- and anxiety-like symptoms with the SWS-depression and SWS-anxiety factor scales rather than with instruments that are more sensitive, such as the Beck Depression Inventory (BDI) and the State Trait Anxiety Inventory (STAI). However, when using the BDI and STAI in patients with SUD who are detoxifying (de Timary et al., 2008), associations were not found between these measures and a change in alexithymia when controlling for anxiety- and depression-like symptoms. Subsequently, the TAS-20 may be criticized for being a self-report instrument, and it is questionable whether a self-report instrument can adequately assess alexithymia (Kooiman et al., 2002; Grabe et al., 2009).

Although we did not observe a correlation between changes in withdrawal, anxiety-, or depression-like symptoms and the mean level change of alexithymia, a reduction over such a brief time period suggests that alexithymia in patients with SUD can be viewed partially as a state phenomenon. This result is supported by the much greater mean level changes that were observed within and between the subgroups of low and high alexithymic patients. However, it is difficult to understand the clinical relevance of this finding given that we do not know to what degree the TAS-20 score (or of one of its subscales) must change before the patients themselves or their environment (family or counselors) would notice any effect on affect regulation. Clearly, more research on this topic must be performed.

We observed a moderate to high relative stability for the entire patient sample. This is an argument for alexithymia as a trait phenomenon in SUD-patients. However, the differences in absolute and, although not significant, relative stability among low, moderate, and high alexithymic patients argue against alexithymia, as measured using the TAS-20, as a stable autonomous personality trait in SUD populations. This replication of our previous study in a different population (de Haan et al., 2012a) contributes to the external validity of these findings. To determine the extent to which these findings are due to the use of the TAS-20 as a measure for alexithymia, we propose that further research into the stability concept of alexithymia be performed with other instruments, such as the Bermond Vorst Alexithymia Questionnaire (Vorst & Bermond, 2001), the Observer Alexithymia Scale (Haviland et al., 2001), or the Toronto Structured Interview for Alexithymia (Bagby et al., 2006, Caretti et al., 2011).

To better understand the concept of stability in alexithymia, it would also be interesting to replicate these findings in non-SUD patient populations and compare observed changes in alexithymia with those of other personality constructs, such as the 5-factor model or temperament and character personality model (Cloninger, 1994). As alexithymia did not relate to abstinence,

attrition, or change in AUD- or SUD-related problems following treatment in the most recent studies (de Haan et al., 2011, 2012b; Stasiewicz et al., 2012) and given that attrition was also unrelated to alexithymia in this study, the clinical relevance of measuring alexithymia with the TAS-20 in detoxifying patients with SUDs remains difficult to determine. However, as a state and trait phenomenon during a detoxification period, alexithymia may be partly an addiction-related temporary,but for the other part a long-lasting disruption of emotion-oriented brain functions. Both possibilities should be considered, and it should be noted in clinical practice that many patients with SUD may have a reduced capacity to identify and describe feelings during detoxification. Psycho-education, especially on the (partly) temporary or state character of alexithymia could perhaps help SUD-patients to overcome this period and help to keep them in treatment during detoxification.

References

Bagby, R.M., Parker, J.D., Taylor, G.J., 1994. The twenty-item Toronto Alexithymia Scale--I. Item selection and cross-validation of the factor structure. Journal of Psychosomatic Research 38, 23-32.

Bagby, R.M., Taylor, J.T., Parker, J.D.A., Dickens, S.E., 2006. A structured interview for assessing alexithymia. Journal of Psychosomatic Research 61, 374-374.

Bandura, A., Caprara, G.V., Barbaranelli, C., Gerbino, M., Pastorelli, C., 2003. Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. Child Development 74, 769-782.

Beck A.T., Steer R.A.. Beck Depression Inventory, 1987. Manual. San Antonio, TX: The Psychological Corp.

Berking, M., Margraf, M., Ebert, D., Wupperman, P., Hogmann, S.G., Junghanns, K., 2011. Deficits in emotion–regulation skills predict alcohol use during and after cognitive-behavioral therapy for alcohol dependence. Journal of Consulting and Clinical Psychology 79, 307-318.

Bruce, G., Curren, C., Williams, L., 2012. Alexithymia and alcohol consumption: the mediating effects of drinking motives. Addictive Behaviors 37, 350-352.

Caretti, V., Porcelli, P., Solano, L., Schimmenti, A., Bagby, R.M., Taylor, G.J., 2011. Reliability and validity of the Toronto Structured Interview for Alexithymia in a mixed clinical and nonclinical sample from Italy. Psychiatry Research 187, 432-436.

Caspi, A., Roberts, B.W., Shiner, R.L., 2005. Personality development: stability and change. Annual Review of Psychology 56, 453-484.

Cleland, C., Magura, S., Foote, J., Rosenblum, A., Kosanke, N., 2005. Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. Journal of Psychosomatic Research 58, 299-306.

Cloninger, C.R., 1994. Temperament and personality. Current Opinion in Neurobiology 4, 266-273.

Compton, W.M., Cottler, L.B., Dorsey, K.B., Spitznagel, E.L., Mager, D.E., 1996. Comparing assessments of DSM-IV substance dependence disorders using CIDI-SAM and SCAN. Drug and Alcohol Dependence 42, 217-219.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P.B., van der Palen, J., De Jong, C.A.J., 2011. Cognitive behavioural treatment is as effective in high- as in low-scoring alexithymic patients with substance-related disorders. Psychotherapy and Psychosomatics 80, 254-255.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P., van der Palen., J., De Jong, C.A.J., 2012a. Alexithymia is not a stable personality trait in patients with substance use disorders. Psychiatry Research 198, 123-129.

de Haan, H.A., Schellekens, A.F., van der Palen, J., Verkes, R.J., Buitelaar, J.K., De Jong, C.A., 2012b. The level of alexithymia in alcohol-dependent patients does not influence outcomes after inpatient treatment. American Journal of Drug and Alcohol Abuse 38, 299-304.

De Rick, A., Vanheule, S., 2007. Alexithymia and DSM IV personality disorder traits in alcoholic inpatients: a study of the relation between both constructs. Personality and Individual Differences 43, 119-129.

de Timary, P., Luts, A., Hers, D., Luminet, O., 2008. Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: relationship to depression and anxiety. Psychiatry Research 157,105-113.

Dijkstra, B.A.G., Krabbe, P.F.M., Riezebos, T.G.M., van der Staak, C.P.F., De Jong, C.A.J., 2007. Psychometric evaluation of the Dutch version of the Subjective Opiate Withdrawal Scale (SOWS). European Addiction Research 13, 81-88.

Ezzati, M., Lopez, A.D., Rodgers, A., Vander Hoorn, S., Murray, C.J.L., 2002. Selected major risk factors and global and regional burden of disease. Lancet 360, 1347-1360.

Grabe, H.J., Lobel, S., Dittrich, D., Bagby, R.M., Taylor, G.J., Quilty, L.C., Spitzer, C., Barnow, S., Mathier, F., Jenewein, J., Freyberger, H.J., Rufer, M., 2009. The German version of the Toronto Structured Interview for Alexithymia: factor structure, reliability, and concurrent validity in a psychiatric patient sample. Comprehensive Psychiatry 50, 424-430.

Harwood, H., 2000. Updating estimates of the economic costs of alcohol abuse in the United States: estimates, update methods, and data. U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism.

Haviland, M.G., Macmurray, J.P., Cummings, M.A., 1988. The relationship between alexithymia and depressive symptoms in a sample of newly abstinent alcoholic inpatients. Psychotherapy and Psychosomatics 49, 37-40.

Haviland, M.G., Hendry, M.S., Shaw, D.G., Henry J.P. (1994). Alexithymia in women and men hospitalized for psychoactive substance dependence. Comprehensive Psychiatry, 35, 124-128.
Haviland, M.G., Warren, W.L., Riggs, M.L., Gallacher, M., 2001. Psychometric properties of the observer alexithymia scale in a clinical sample. Journal of Personality Assessment 77, 176-186.
Hendriks, V.M., Kaplan, C.D., Vanlimbeek, J., Geerlings, P., 1989. The addiction severity index - reliability and validity in a Dutch addict population. Journal of Substance Abuse Treatment 6, 133-141.
Honkalampi, K., Koivumaa-Honkanen, H., Tanskanen, A., Hintikka, J., Lehtonen, J., Viinamaki, H., 2001. Why do alexithymic features appear to be stable? A 12-month follow-up study of a general population. Psychotherapy and Psychosomatics 70, 247-253.
Kooiman, C.G., Spinhoven, P., Trijsburg, R.W., 2002. The assessment of alexithymia: a critical review of the literature and a psychometric study of the Toronto Alexithymia Scale-20. Journal of Psychosomatic Research 53, 1083-1090.
Loas, G., Fremaux, D., Otmani, O., Lecercle, C., Delahousse, J., 1997. Is alexithymia a negative factor for maintaining abstinence? A follow-up study. Comprehensive Psychiatry 38, 296-299.
Lyvers, M., Onuoha, R., Thorberg, F.A., Samios, C., 2011. Alexithymia in relation to parental alcoholism, everyday frontal lobe functioning and alcohol consumption in a non-clinical sample.
Addictive Behaviors 37, 205-210.
Mattila, A.K., Salminen, J.K., Nummi, T., Joukamaa, M., 2006. Age is strongly associated with alexithymia in the general population. Journal of Psychosomatic Research 61, 629-635.
Office of National Drug Policy, 2004. The economic costs of drug abuse in the United States: 1992-2002.
Parker, J.D.A., Keefer, K.V., Taylor, G.J., Bagby, R.M., 2008. Latent structure of the alexithymia construct: a taxonomic investigation. Psychological Assessment 20, 385-396.
Pinard, L., Negrete, J.C., Annable, L., Audet, N., 1996. Alexithymia in substance abusers: persistence and correlates of variance. American Journal on Addictions 5, 32-39.
Roberts, B.W., DelVecchio, W.F., 2006. The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. Psychological Bulletin 126, 3-25.
Roberts, B.W., Walton, K.E., Viechtbauer, W., 2006. Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. Psychological Bulletin 132, 1-25.
Rosenblum, A., Cleland, C., Magura, S., Mahmood, D., Kosanke, N., Foote, J., 2005. Moderators of effects of motivational enhancements to cognitive behavioral therapy. American Journal of Drug and Alcohol Abuse 31, 35-58.
Schotte, C.K., de Doncker, D.A., Dmitruk, D., Van Mulders, I., D'Haenen, H., Cosyns, P., 2004. The ADP-IV questionnaire: differential validity and concordance with the semi-structured interview. Journal of Personality Disorders 18, 405-419.
Schotte, C.K., de Doncker, D.A., Vankerckhoven, C., Vertommen, H., Cosyns, P., 1998. Self-report assessment of the DSM-IV personality disorders. Measurement of trait and distress characteristics: the ADP-IV. Psychological Medicine 28, 1179-1188.
Sifneos, P.E., 1973. The prevalence of 'alexithymic' characteristics in psychosomatic patients. Psychotherapy and Psychosomatics 22, 255-262.
Smit, F., Cuijpers, P., Oostenbrink, J., Batelaan, N., de Graaf, R., Beekman, A., 2006. Costs of nine common mental disorders: implications for curative and preventive psychiatry. Journal of Mental Health Policy and Economics 9, 193-200.
Spielberger C.D., 1983. Manual for the State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press.
Stasiewicz, P.R., Bradizza, C.M., Gudleski, G.D., Coffey, S.F., Schlauch, R.C., Bailey, S.T., Bole, C.W., Gulliver, S.B., 2012. The relationship of alexithymia to emotional dysregulation within an alcohol dependent treatment sample. Addictive Behaviors 37, 469-476.
Taylor, G.J., Graeme, J., Bagby, R.M., Parker, J.D.A., 1997. Disorders of affect regulation: alexithymia in medical and psychiatric illness. Cambridge University Press, Cambridge.
Thorberg, F.A., Young, R.M., Sullivan, K.A., Lyvers, M., 2009. Alexithymia and alcohol use disorders: a critical review. Addictive Behaviors 34, 237-245.
Thorberg, F.A., Young, R.M., Sullivan, K.A., Lyvers, M., Connor, J.P., Feeney, G.F.X., 2011a. Alexithymia, craving and attachment in a heavy drinking population. Addictive Behaviors 36, 427-430.

Thorberg, F.A., Young, R.M., Sullivan, K.A., Lyvers, M., Hurst, C.P., Connor, J.P., Feeney, G.F.X., 2011b. Alexithymia in alcohol dependent patients is partially mediated by alcohol expectancy. Drug and Alcohol Dependence 116, 238-241.

Vorst, H.C.M., Bermond, B., 2001. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. Personality and Individual Differences 30, 413-434.

Wilberg, T., Karterud, S., Pedersen, G., Urnes, O., Costa, P.T., 2009. Nineteen-month stability of Revised NEO Personality Inventory domain and facet scores in patients with personality disorders. Journal of Nervous and Mental Disorders 197, 187-195.

Ziolkowski, M., Gruss, T., Rybakowski, J.K., 1995. Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence? Psychotherapy and Psychosomatics 63, 169-173.

Chapter 6

A family history of alcoholism relates to alexithymia in substance use disorder patients**

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Keywords: alexithymia, family history of alcoholism, addiction severity, substance use disorder

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Abstract

Objectives: Previous research identified alexithymia as a potential risk factor for substance use disorders (SUD). More insight into the relation between alexithymia and SUD is needed in order to treat SUD effectively. Therefore, we investigated whether a familial vulnerability to alcoholism relates to the presence and severity of alexithymia in SUD patients.

Method: Hospitalized, abstinent SUD-patients (n = 187), were assessed with the Toronto Alexithymia Scale (TAS-20) and Addiction Severity Index (EuropASI). A maternal, paternal, and total continuous measure of the Family History of Alcohol (FHA) was developed. Kruskal-Wallis tests and Spearman correlations were used to relate the composite scores of FHA to alexithymia as a categorical and continuous measure. Multivariate regression models were performed to control for the effects of confounders on the relation between FHA and alexithymia.

Results: Compared to moderate (33%) and low (17%) alexithymic SUD-patients, high alexithymic (50%) patients were more likely to have fathers with alcohol problems ($P = 0.004$). Such a difference was not found for mothers with alcohol problems. The composite FHA-score was significantly associated with alexithymia ($Rs = .19$, $P = 0.01$). However, only a paternal FHA, independent from disturbed family functioning, related to the degree of alexithymia ($\beta = .13$, $P = 0.06$), especially to the Difficulty Identifying Feelings as measured by the TAS-20 ($\beta = .16$, $P = 0.02$).

Conclusions: The relation between a paternal FHA and a higher degree of alexithymia in SUD-patients suggests that alexithymia could mediate the familiality of alcoholism or SUD in the paternal line.

Introduction

Sifneos first described the notion of alexithymia in 1973 [1] as the inability to express emotions or feelings'. Alexithymia is mostly seen as a personality construct characterized as a deficit in the ability to cognitively process and regulate emotions [2]. Whereas the prevalence of alexithymia in population-based studies varies between 8% and 15% [3], rates of up to 67% have been reported in patients with alcohol use disorders (AUD) [4] and up to 50% in patients with other substance use disorders (SUD) [5, 6]. In socio-demographic studies, alexithymia has been associated with older age, low educational level, low socio-economic status, poor perceived health, and depression, although not all of these associations have been consistently observed in all studies [7-9]. Additionally, in SUD, alexithymia was related to state-anxiety and depression [10]. As alexithymia has been described as a potential risk factor for SUD, and in some studies, it has been related to negative treatment outcomes, improving the understanding of the relation between alexithymia and SUD could be of importance in the treatment of SUD and the optimization of treatment interventions [4, 11, 12].

In the context of further research into the relationship between alexithymia and AUD, in particular in view of the potential role of alexithymic traits in the etiology of AUD, three previous studies looked at the effect of a family history of alcoholism (FHA) on alexithymia [13-15]. One study found strong alexithymic features in non-alcoholic sons with an extensive generational paternal history of alcoholism, but not in non-alcoholic sons without any family history or with alcoholic fathers without an extensive family history [13]. In the second study consisting of 100 male patients with alcohol dependence, no relation between a FHA and alexithymia was found [14]. However, both studies assessed alexithymia using the Sifneos-Schalling Personality Scale (SSPS), which lacks sufficient validity and internal reliability [2]. The most recent study conducted with a non-clinical population found an association between the Toronto Alexithymia Scale (TAS-20) and being the offspring of an alcoholic parent, as defined by the Children of Alcoholics Screening Test (CAST) [15]. This population comprised 314 volunteers (54% female and 53% university students) aged 18–45 years, all of whom reported at least occasional alcohol consumption and 6% using an illicit drug more than once per month. Unfortunately, the results were limited in specificity because the CAST does not allow differentiation between mothers or fathers with alcohol problems.

A substantial genetic influence of alexithymia has been demonstrated in a small and extensive twin pair study. This was replicated in a study that controlled for depressive symptoms [16-18]. Results from the first, small study [16] indicated that familial influences contributed to all 3 subscales of the TAS-20, i.e. Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF) and Externally Oriented Thinking (EOT). The results also suggested that DIF and DDF were primarily influenced by nongenetic shared family environmental factors and EOT by genetic factors. However, because of the very small sample (77 twin pairs) and the way of

recruiting, the different results could be due to selection bias [17]. Therefore the authors are not very confident concerning the distribution of the genetic and shared family environmental factors to the subscales of the TAS-20 [16]. The two other, larger studies (8,785 [17] and 729 [18] twin pairs) found no differences between the subscales of the TAS-20. The Danish study [17] found nonshared environmental effects of 50-56%, heritabilities of 30-33% and 12-20% of the variance of the alexithymia scores being explained by shared environmental effects. In the Italian study [18] nonshared environmental factors accounted also for most of the variation in the TAS-20 and its subscales. When corrected for depression and gender a heritability factor of 33% was found for the total TAS-20, with no significant differences between the subscales. No significant contribution of shared environmental influences on alexithymia was found [18].

Based on this genetic and familial influence, a higher percentage of alexithymia is expected in parents and other family members of alexithymic patients. As alexithymia and alcohol use disorders are related, this could be a reason for more alcohol problems in the relatives of alexithymic patients [4, 15]. However, in alexithymic patients with SUD or AUD, other genetic, environmental or familial mechanisms could of course have an important role in the alcohol problems of their relatives [19].

As part of an often shared environmental or familial mechanism, problems with alcohol in parents could result in neglecting their child's emotional states, leading to emotional self-regulation deficits, such as alexithymia. The latter has been shown in a recent meta-analysis on parental bonding and alexithymia [20]. A lack of maternal care, but also maternal and paternal overprotection, related to alexithymia [20]. In line with this, a disturbed family functioning has been found to relate to the development of alexithymic characteristics [21]. Similar finding was observed for a history of neglect or sexual abuse, regardless of whether it occurred within the family [22 - 24].

In this study, our aim was to test the hypothesis that the presence of a FHA would be related to higher levels of alexithymia in SUD-patients while controlling for disturbed family functioning and other variables, representing a combination of shared and unshared environmental issues.

Method

Subjects

Participants were SUD inpatients from three addiction treatment centres in the East and South part of the Netherlands. The study sample participated in a randomized controlled trial investigating a Shared Decision Making Intervention (SDMI) in addiction health care that was carried out between January 2005 and December 2006 and published in 2009 [25]. Overall, 187 of the 212 participants (88%) in the RCT were willing to participate in the alexithymia study and were assessed accordingly. No distinction was made for the kind of substance(s) used. Exclusion criteria were being younger than 18 years of age, insufficient knowledge of the Dutch

language, severe psychiatric co-morbidity precluding their participation in the SDM-intervention, or no signed informed consent.

All patients have been diagnosed according to DSM-IV-TR as having one or more substance related disorders. The Dutch Ethical Assessment Committee for Experimental Investigations on People (No. 4.108) approved the study, and all participants gave written informed consent.

Instruments

For the assessment of alexithymia, the Dutch version of the TAS-20 was used [26-28]. It comprises three factors, DIF, DDF, and EOT. The TAS-20 demonstrated good internal consistency (α = .81) and test-retest reliability over a three-week interval (r = .77). The TAS-20 further has a three factor structure congruent with the alexithymia construct [26, 27]. Each item was measured on a five-point Likert scale ranging from "completely disagree" to "completely agree". We used the total score and the 3 factor scores of the TAS-20 as dependent measures. The TAS-20 total scores can be categorized according to the empirically derived cut-off points suggested by Taylor et al. [2]. A total score of 61 and above indicates a high alexithymia score, scores between 52 and 60 represent a moderate degree, and scores of 51 and below indicate a low alexithymia score. The internal consistency of the total Dutch TAS-20, DIF, and DDF in psychiatric outpatients and students varied between α = .67 and α = .85. The internal consistency of the EOT in general population and psychiatric patient samples was lower (α = .52 – .66). The test-retest reliability in psychiatric outpatients over a three-month interval was satisfactory for the total TAS-20 (r = .74) and DIF-factor (r = .71) but was less so for the DDF- (r = .68) and EOT-factors (r = .66) [28].

Type of substance use disorder was assessed by using the Composite International Diagnostic Interview, Substance Abuse Module (CIDI-SAM) [29]. The CIDI-SAM is an expanded and more detailed version of the substance use sections of the CIDI. The interview questions address the diagnostic criteria of DSM-IV-TR and ICD-10 psychoactive SUD.

Severity of substance use at baseline was measured using the European Addiction Severity Index (EuropASI) [30, 31]. The EuropASI is a clinical research interview designed to assess problem severity in 7 areas of functioning: physical health, employment, alcohol and/or drug use, legal, family/social, and psychiatric. Seven severity domains with scores that could range from 0 (no problem) to 9 (extremely serious problem) were derived from this interview. The family/social domain of the EuropASI represents an estimate of family and social problems and includes items assessing patients' history of trauma (physical or sexual). It is a combination of shared and unshared environmental issues.

Data analysis

Because alexithymia is better conceptualized as a continuous rather than a categorical variable [32], we especially examined associations with alexithymia as a continuous variable. However, to gain more insight on our patient sample from a clinical point of view, we also examined some associations with alexithymia as a categorical variable with low, intermediate, and high levels. Chi-square tests were used to analyse dichotomous or categorical data and ANOVA or the Kruskal-Wallis test were used to analyse continuous data.

To assess the degree of FHA, we created a maternal, paternal, and total FHA variable by multiplying 1st family degree by a factor 3, 2nd degree by a factor 2, and 3rd degree by a factor 1, and then adding these scores up to a total maternal and paternal FHA-variable. We did use a genealogical classification of the different degrees of family relatedness: 1st family degree was represented by the biological parents (score range: 0 – 2: 0 = no parent with alcoholism; 1 = one parent with alcoholism etc.), 2nd degree by grandparents (score range: 0 – 4), brothers and sisters (score range; 0 – 4) and 3rd degree by aunts and uncles (score range: 0 – 4), Other (biological) family members were not assessed by the EuropASI and therefore not available. In case of unfamiliarity or doubt about the FHA or absence of specific family members, values were scored as negative for alcoholism. To check the validity of these variables, we related them to a well-known typology of alcohol dependence, namely Early (EOA) (≤ 25 years) or Late Onset Alcoholism (LOA) (> 25 years) with more evidence of familial alcoholism for EOA [33]. EOA or LOA was based on the EuropASI-question that inquired about the age at which patients started to drink 5 or more units of alcohol per occasion.

Multivariate linear regression models were conducted with total TAS-20 and factor scores as the dependent variables. The predictor variables, mostly based on previous research, were total maternal and paternal FHA, age, gender, and EuropASI "family/social relations" and "psychiatric" domains [7, 11, 24, 25]. Variables with a $p < 0.2$ in univariate analyses were entered in a full multivariate model. Subsequently, non-significant variables were removed, one by one, until *R*-squared changed by more than 10%.

All statistical tests were 2-sided, considered significant at a p value ≤ 0.05, and conducted using SPSS for Windows (release 16.0).

Results

Patient characteristics

According to the cut-off score, 37% (n = 69) had a high degree of alexithymia, 30% (n = 56) had a moderate degree of alexithymia, and 33% (n = 62) had low alexithymia. The mean TAS-20 score was 55.7 (SD = 11.3). Forty-seven (25%) patients were female. Mean age was 40.7 years (SD = 10.9) and 94% was born in the Netherlands. Seventeen percent was married, 39% was divorced or widowed, and 44% had never been married. Forty-four percent was unemployed and

mean years of education was 11.4 (SD = 3.0). Most, 54%, preferred alcohol as the substance of preference, 29% polydrugs, 11% cocaine or other stimulants, 4 % cannabis, and 2% other substances, with no gender differences. Alexithymia was measured as a continuous variable related to years of education (r = -.19, P = 0.01) and the EuropASI "psychiatry" domain (r = .31, P < 0.001), but unrelated to gender, age, country of birth, kind of relationship, degree of employment, years of alcohol or drug use, type of substance dependence, substance preference, and other EuropASI domains.

Relation between FHA and early (EOA) or late-onset alcoholism (LOA)

No significant differences were found between the maternal FHA in EOA (n = 82) [Mdn =0.0 (IQR = 0.0 – 2.2)] and in LOA (n = 53) [Mdn =0.0 (IQR = 0.0 – 1.0)] (U = 1845.0, z = -1.7, P = 0.09) and between the paternal FHA (n = 82) in EOA [Mdn =0.0 (IQR = 0.0 – 3.0)] and in LOA (n = 53) [Mdn =0.0 (IQR = 0.0 – 3.0)] U = 1969.5, z = -1.0, P = 0.31). However, a difference was found between EOA (n = 81) [Mdn =3.0 (IQR = 0.0 – 6.0)] and LOA (n = 53) [Mdn = 2.0 (IQR = 0.0 – 4.0)] (U = 1714.0, z = -2.0, P = 0.05) for the total FHA-variable.

Relation between FHA and alexithymia

High alexithymic patients were more likely to have alcoholic fathers but not mothers compared to moderate and low alexithymic patients (Table 1). When comparing patients with none, one, or two alcoholic parents, we found that high alexithymic patients were more likely to have two alcoholic parents compared to moderate and low alexithymic patients. Looking at the paternal, maternal, and total FHA, high alexithymic patients obtained higher scores on the total, paternal, and maternal FHA compared to low alexithymic patients.

Mean (SD) of the total TAS-20 for patients with non-alcoholic mothers did not differ from the mean obtained by patients with alcoholic mothers [M = 55.3 (11.4); M = 58.1 (11.4); t (181) = 1.2, P = 0.23]. These patients did not differ in the DIF [M = 18.8 (6.4); M = 20.9 (6.7); t (181) = 1.6, P = 0.11], DDF [M = 16.3 (4.3); M = 16.4 (3.8); t (181) = 0.7, P = 0.91] and EOT [M = 20.3 (4.2); M = 20.9 (4.1); t (181) = 0.7, P = 0.47]. However, differences were found for patients with non-alcoholic versus alcoholic fathers on the TAS-20 [M = 53.9 (11.7); M = 59.1(9.8); t (177) = 3.0, P = 0.003], the DIF-factor [M = 17.9 (6.5); M = 21.2 (5.5); t (177) = 3.3, P = 0.001] and the DDF-factor [M = 15.8 (4.4); M = 17.1 (3.9); t (177) = 2.0, P = 0.05], but not on the EOT-factor [M = 20.2 (4.1); M = 20.8 (4.2); t (177) = 1.0, P = 0.32].

When comparing patients with none, one, or two alcoholic parents, the total TAS-20 [M = 53.9 (12.0); M = 57.9 (9.3); M = 60.1 (11.3); F (2, 173) = 3.5, P = 0.03] and the DIF-factor [M = 18.0 (6.6); M = 20.1 (5.5); M = 22.3 (6.3); F (2, 173) = 4.5, P = 0.01] differed, but not the DDF and EOT-factors. Post hoc tests (Tukey HSD) showed a significant difference between patients with none and two alcoholic parents in the DIF-factor only.

The results indicated significant correlations (Spearman) between maternal FHA and both the total TAS-20 (*Rs* = .15, *P* = 0.04; n = 187) and the DIF-factor (*Rs* = .20, *P* = 0.006; n = 187), between paternal FHA and both the total TAS-20 (*Rs* = .19, *P* = 0.01; n = 187) and the DIF-factor (*Rs* = .24, *P* = 0.001; n = 187), and between total FHA and both the Tas-20 total (*Rs* = .19, *P* = 0.01; n = 186) and the DIF-factor (*Rs* = .28, *P* <0.001; n = 186).

Table 1. *Family history of alcoholism: Characteristics of low, moderate and high alexithymic patients (n=187)*

Patient characteristics	Low alexithymic (TAS < 52) n = 62 (33 2%)	Moderate alexithymic (51 < TAS < 61) n = 56 (29,4%)	High alexithymic (TAS > 60) n = 69 (36 9%)	χ^2	*H*	*P*
Mother %(n)				1.9		0.38
Alcoholic(-)	35.1(54)	29.2(45)	35.7(55)			
Alcoholic(+)	24.1(7)	27.6(8)	48.3(14)			
Father %(n)				11.1		0.004
Alcoholic(-)	41.3(50)	28.1(34)	30.6(37)			
Alcoholic(+)	17.2(10)	32.8(19)	50.0(29)			
Parents %(n)				12.2		0.02
Alcoholic(-)	41.8(46)	26.4(29)	31.8(35)			
Alcoholic(+)	20.0(10)	38.0(19)	42.0(21)			
Alcoholic(++)	18.8(3)	18.8(3)	62.5(10)			
Maternal FHA Mdn(IQR)	0.0(0.0 – 0.0)	0.0(0.0 – 1.8)	0.0(0.0 – 3.0)		7.6	0.02
Paternal FHA Mdn(IQR)	0.0(0.0 – 1.0)	0.0(0.0 – 3.0)	0.0(0.0 – 3.0)		9.3	0.01
Total FHA Mdn(IQR)	1.0(0.0 – 4.0)	3.0(0.0 – 5.0)	3.0(0.5 – 6.0)		9.5	0.009

Notes: Mdn = Median, IQR = Interquartile Range: 25th – 75th percentile; FHA = Family History for Alcoholism; H = Kruskal-Wallis test

Estimating the relation between the FHA and alexithymia, controlling for gender, age, EuropASI "family/social relations" and "psychiatry" domains

When performing multivariate regression models with the total TAS-20 or TAS-20 factors as dependent variables, total FHA contributed a small part (β(r) = .16, *P* = 0.02) to the variance in the DIF-factor and although not significantly (β(r) = .13, *P* = 0.11) to the variance in the total TAS-20, , next to the "psychiatry" domain of the EuropASI and the years of education (Table 2).

Table 2. *Multivariate linear regression analyses predicting TAS-20 total and factors from gender, age, the "family/social" and "psychiatry" domains and total family history of alcoholism (FHA). Non-significant variables were removed until R-squared changed by more than 10%.*

	B(r)	*P*	R^2	*Fchange*	*P*
TAS-20 total (n = 185)			.14	9.39	<0.001
"Psychiatry" domain	.28	<0.001			
Years of education	-.15	0.02			
Total FHA	.13	0.11			
DIF-factor (n = 185)			.22	24.93	<0.001
"Psychiatry" domain	.40	<0.001			
Total FHA	.16	0.02			
DDF-factor (n = 186)			.05	9.22	0.003
"Psychiatry" domain	.22	0.003			
EOT-factor (n = 187)			.09	8.70	<0.001
Gender	-.15	0.03			
Years of education	-.26	<0.001			

Regression models conducted separately for the maternal and paternal line indicated that only paternal FHA contributed a small part to the variance in the total TAS-20 ($\beta(r) = .13$, $P = 0.06$) and the DIF-factor ($\beta(r) = .16$, $P = 0.02$) (Table 3).

Table 3. *Multivariate linear regression analyses predicting TAS-20 total and factors from gender, age, the "family/social" and "psychiatry" domains and family history of alcoholism (HFA) of the maternal and paternal lines. Non-significant variables were removed until R-squared changed by more than 10%.*

	B(r)	*P*	R^2	*Fchange*	*P*
TAS-20 total (n = 186)			.14	10.04	<0.001
"Psychiatry" domain	.28	<0.001			
Years of education	-.16	0.06			
Paternal FHA	.13	0.06			
DIF-factor (n = 186)			.21	23.68	<0.001
"Psychiatry" domain	.40	<0.001			
Paternal FHA	.16	0.02			
DDF-factor (n = 186)			.05	9.22	0.003
"Psychiatry" domain	.22	0.003			
EOT-factor (n = 187)			.09	8.70	<0.001
Gender	-.15	0.03			
Years of education	-.26	<0.001			

Discussion

In response to our research question, we found that high alexithymic SUD-patients were more likely to have fathers or both fathers and mothers, but not mothers only, with alcohol problems compared to low alexithymic SUD-patients. Next, we found that especially paternal FHA relates to the degree of alexithymia, independent of disturbed family functioning.

The high degree of alexithymia in our abstinent SUD sample is consistent with previous reports [4, 10, 34]. Higher scores on the "psychiatry" severity EuropASI domain reflect symptoms of anxiety and depression [31]. The relationship between alexithymia and these symptoms suggests that the high baseline alexithymia score can at least partially be interpreted as a state phenomenon [4, 34]. That relationship is also the reason why we controlled for "psychiatry" severity while analysing the association between alexithymia and FHA. Alexithymia was related to years of education, as was found in previous studies of the general population [3, 8], but not in all [35]. Salminen et al. [3] argued that alexithymic persons are less likely to seek higher education reflecting the social status, values and emotional atmosphere in the family of origin and therefore yielding information about the individual's developmental background. In our study, years of education were related to the EOT-factor and not to the DIF- and DDF-factor. The aforementioned studies [3, 8] did not consider the relations between years of education and the TAS-20 factors. Further developmental and longitudinal studies of alexithymic persons are therefore needed to address the relation between years of education and alexithymia, in particular on factor level. However, we do agree with Salminen et al. [3] that a higher education often requires more psychological introspection and therefore could be less attractive for alexithymic individuals.

The results indicated no significant differences between patients with and without alcoholic mothers in total alexithymia as a dimensional variable or factor scores. We did find a relation between the maternal FHA and alexithymia as a categorical and dimensional variable (total TAS and DIF-factor). However, the effect sizes for alexithymia as a continuous variable were small and the relation disappeared when controlling for psychiatric problems, including anxiety, depression, and the paternal FHA. Therefore, no relation was found between mothers with an alcohol problem themselves or their families and alexithymia in their offspring.

For patients with alcoholic fathers, we found a higher degree of total alexithymia, DIF-, and DDF-factors compared with patients of non-alcoholic fathers, as supported by differences among high, moderate, and low alexithymic patients in percentage of alcoholic fathers. Although the relation between the paternal FHA and offspring alexithymia as a dimensional variable (total TAS and DIF-factor) had a small effect size, it remained significant after controlling for psychiatric problems and other possibly confounding factors like gender, age, and problems in the family or social relations. This indicates that a paternal FHA relates to alexithymia in SUD-patients and is in line with the study of Finn et al. [13], that demonstrated a relation between a paternal FHA and alexithymia, but unlike the study of Rybakowski et al. [14], in which no relation between FHA and

alexithymia was found. In both studies, the FHA was defined as a categorical variable, unlike our continuous score. Next, these studies used an insufficiently valid and unreliable instrument, the SSPS, for assessing alexithymia and did not account for possible confounders [2, 13, 14]. Because the SSPS has another factor structure that has not been validated [2], unlike the TAS-20 [26, 27], we could not make a comparison on alexithymia factor levels between our study and that of Finn et al. [13].

High alexithymic patients had a higher percentage of both parents with alcohol problems compared to moderate and low alexithymic patients. Further, patients who had both parents with alcohol problems scored higher on the DIF-factor compared to patients without alcohol abusing parents. However, without controlling for unshared environmental or psychological confounders, this is not a strong indication for a familial component in the relation between alcohol problems of the parents and a higher alexithymia score in their offspring. For the total FHA, we controlled for some shared (family domain of the EuropASI) and unshared (social relation domain of the EuropASI, age and gender) environmental and psychological confounders. We found that total FHA explained a small part of the variance in the total alexithymia and the DIF-factor. Because this part of the explained variance was just as large as for the paternal FHA, only the latter is of interest in explaining a part of the high prevalence of alexithymia in SUD-patients. We have no good explanation for only a paternal familial transmission. In familial transmission and inheritance studies of alexithymia, no gender differences were found [16-18]. Although some evidence exist concerning sex differences in the inheritance of alcoholism [36] most research suggests an equivalent genetic load for alcohol dependence in both genders [37] and the absence of gender difference in familial transference [38]

Our measure of FHA reflects a combination of genetic and shared environmental aspects and it is impossible to discern the genetic (including gene-environment interaction) and the shared environmental part that contributed to the variance of the DIF-factor and the total TAS-20. In previous twin studies on alexithymia [16-18] no agreement was found in the contribution of the genetic and shared environmental parts on the subscales of the TAS-20. Without one or more replications of our finding it therefore makes little sense to look for explanations that only the DIF-factor and not the DDF- and EOT-factor were related to the FHA.

Our results should be interpreted in the context of some limitations. Our measures of depression, anxiety, and family functioning, especially the relation between parents and patients, were rather global and not specific enough to distinguish unshared and shared environmental issues. We constructed a new measure of total FHA, which was related to an EOA. However, our measure of paternal FHA was not, and familial alcoholism in EOA is especially seen in the paternal line [33]. Finally, we used the family history approach and collected information on family members from our patients rather than from these family members themselves.

In conclusion, we did find a relation between a paternal FHA and a higher degree of alexithymia in SUD-patients, with an indication that this relation is partly based on a familial component. The

clinical importance of this finding is that alexithymia could mediate the familiality of alcoholism or SUD in the paternal line, however, to a small extent, given the correlations of the paternal FHA with total TAS-20 ($\beta(r) = .13$) and DIF-factor ($\beta(r) = .16$). In order to look for more causal models to explain this relationship, structural equation modelling should be performed on larger datasets of twins and extended family that would provide both data on substance use and alexithymia of all family members. Further, more directly, candidate genes may be considered to test for associations between genetic polymorphisms shown to be related to alexithymia and alcoholism [39, 40]. With more indications for alexithymia as an endophenotype that mediates familial risk for alcoholism, it would be interesting to develop evidence-based treatments for alexithymia, which to our knowledge do not exist.

References

[1] Sifneos, P.E. (1973). The prevalence of 'alexithymic' characteristics in psychosomatic patients. *Psychother Psychosom., 22*, 255-62.

[2] Taylor, G.J., Bagby, R.M., & Parker, J.D.A. (1997). *Disorders of affect regulation*. Cambridge: Cambridge university press.

[3] Salminen, J.K., Saarijarvi, S., Aarela, E., Toikka, T., & Kauhanen, J. (1999). Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland. *J Psychosom Res, 46*, 75-82.

[4] Thorberg, F.A., Young, R.M., Sullivan, K.A., & Lyvers, M. (2009). Alexithymia and alcohol use disorders: A critical review. *Addict Behav., 34*, 237-45.

[5] Haviland, M.G., Shaw, D.G., MacMurray J.P. & Cummings MA. (1988). Validation of the Toronto alexithymia scale with substance abusers. *Psychother Psychosom, 5,* 81–87.

[6] Oyefeso, A., Brown, S., Chiang, Y. & Clancy, C. (2008). Self-injurious behaviour, traumatic life events and alexithymia among treatment-seeking opiate addicts: Prevalence, pattern and correlates. *Drug Alcohol Depend, 98(3),* 227-34

[7] Mattila, A.K., Salminen, J.K., Nummi, T., & Joukamaa, M. (2006). Age is strongly associated with alexithymia in the general population. *J Psychosom Res, 61*, 629-35.

[8] Franz, M., Popp, K., Schaefer, R., Sitte, W., Schneider, C., & Hardt, J., et al. (2008). Alexithymia in the German general population. *Soc Psychiatry Psychiatr Epidemiol., 43*, 54-62.

[9] Saarijarvi, S., Salminen, J.K., Tamminen, T., & Aarela, E. (1993). Alexithymia in psychiatric consultation-liaison patients. *Gen Hosp Psych., 15,* 330-3.

[10] Haviland, M.G., Hendry, M.S., Shaw, D.G., & Henry, J.P. (1994). Alexithymia in women and men hospitalized for psychoactive substance dependence. *Compr Psychiat., 35*, 124-8.

[11] Loas, G., Fremaux, D., Otmani, O., Lecercle, C., & Delahousse, J. (1997). Is alexithymia a negative factor for maintaining abstinence? A follow-up study. *Compr. Psychiat., 38*, 296-299.

[12] Ziolkowski, M., Gruss, T., & Rybakowski, J.K. (1995). Does alexithymia in male alcoholics constitute a negative factor for maintaining abstinence? *Psychother Psychosom., 63*, 169-173.

[13] Finn, P.R., Martin, J., & Pihl, R.O. (1987). Alexithymia in males at high genetic risk for alcoholism. *Psychother Psychosom, 47*,18-21.

[14] Rybakowski, J., & Ziolkowski, M. (1991). Clinical and biochemical heterogeneity of alcoholism: The role of family history and alexithymia. *Drug Alcohol Depend., 27*, 73-7.

[15] Lyvers, M., Onuoha, R., Thorberg, F.A., & Samios, C. (2012). Alexithymia in relation to parental alcoholism, everyday frontal lobe functioning and alcohol consumption in a non-clinical sample. *Addict Behav, 37*, 205–210.

[16] Valera, E.M. & Berenbaum, H. (2001). A twin study of alexithymia. *Psychother Psychosom 70,* 239–246.

[17] Jorgensen, M.M., Zachariae, R., Skytthe, A., & Kyvik, K. (2007). Genetic and environmental factors in alexithymia: A population-based study of 8,785 Danish Twin pairs. *Psychother Psychosom. 76*, 369-75.

[18] Picardi, A., Fagnani, C., Gigantesco, A., Toccaceli, V., Lega, I., & Stazi, M.A. (2011). Genetic influences on alexithymia and their relationship with depressive symptoms. *Jf Psychosom Res, 71*, 256–263

[19] Wang, J.C., Kapoor, M. & Goate, A.M. (2012). The genetics of Substance Dependence. *Ann Rev Genom Hum Genet, 13,* 241-261.

[20] Thorberg, F.A., Young, R.M., Sullivan, K.A., & Lyvers, M. (2011). Parental bonding and alexithymia: A meta-analysis. *Europ Psychy, 26*,187–193.

[21] Lumley, M.A., Mader, C., Gramzow, J., & Papineau, K. (1996). Family factors related to alexithymia characteristics. *Psychosom Med., 58*, 211-6.[22] Berenbaum, H. (1996). Childhood abuse, alexithymia and personality disorder. *J Psychosomat Res., 41*, 585-95.

[23] Bermond, B., Moormann, P.P., Albach, F., & van Dijke, A. (2008). Impact of severe childhood sexual abuse on the development of alexithymia in adulthood. *Psychother Psychosom., 77*, 260-2.

[24] Evren, C., Evren, B., Dalbudak, E., Ozcelik, B., & Oncu, F. (2009). Childhood abuse and neglect as a risk factor for alexithymia in adult male substance dependent inpatients. *J Psychoactive Drugs, 41*, 85-92.

[25] Joosten, E.A.G., de Jong, C.A.J., de Weert-van Oene, G.H., Sensky, T., & van der Staak, C.P.F. (2009). Shared decision-making reduces drug use and psychiatric severity in substance-dependent patients. *Psychother Psychosom., 78,* 245-53.
[26] Bagby R.M,, Parker, J.D.A, & Taylor, G.J.(1994) The Twenty-Item Toronto Alexithymia Scale: I. Item selection and cross-validation of the factor structure. *J Psychosom Res, 38*, 23–32.
[27] Bagby R.M., Taylor, G.J. & Parker, J.D.A.(1994) The Twenty-Item Toronto Alexithymia Scale: II. Convergent, discriminant, and concurrent validity. *J Psychosom Res, 38*, 33–40.
[28] Kooiman, C.G., Spinhoven, P., & Trijsburg, R.W. (2002). The assessment of alexithymia - A critical review of the literature and a psychometric study of the Toronto Alexithymia Scale-20. *J Psychosomat Res., 53*, 1083-90.
[29] Compton, W.M., Cottler, L.B., Dorsey, K.B., Spitznagel, E.L., Mager, D.E. (1996). Comparing assessments of DSM-IV substance dependence disorders using CIDI-SAM and SCAN. *Drug Alcohol Depend, 42,* 217-9.
[30] McLellan, A.T., Luborsky, L., Woody, G.E., Obrien, C.P. (1980). Improved diagnostic evaluation instrument for substance abuse patients – Addiction Severity Index. *J Nerv Ment Dis,168*, 26-33.
[31] Hendriks, V.M., Kaplan, C.D., Vanlimbeek, J., & Geerlings, P. (1989). The Addiction Severity Index – reliability and validity in a Dutch addict population. *J Subst Abuse Treat, 6*, 133-41.
[32] Parker, J.D.A., Keefer, K.V., Taylor, G.J., & Bagby, R.M. (2008). Latent structure of the alexithymia construct: A taxometric investigation. *Psychol Assess, 20,* 385-96.
[33] Leggio, L., Kenna, G.A., Fenton, M., Bonenfant, E., & Swift, R.M. (2009). Typologies of alcohol dependence. From Jellinek to genetics and beyond. *Neuropsychol Rev., 19*, 115-29.
[34] de Timary, P., Luts, A., Hers, D., & Luminet, O. (2008). Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. *Psychiatry Res.,157*, 105-13.
[35] Parker JDA, Taylor GJ, Bagby RM. (1989).The alexithymia construct: relationship with sociodemographic variables and intelligence. *Compr Psychiatry 1989,30*, 434–441.
[36] Schuckit, M.A. et al. (2012). Sex differences in how a low sensitivity to alcohol relates to later heavy drinking. *Drug Alcohol Rev 31(7),* 871-80
[37] Walters, G. D. (2002). The heritability of alcohol abuse and dependence: A meta analysis of behavior genetic research. *Am J Drug Alcohol Abuse, 28,* 557–584.
[38] Campbell, J.M. & Oei, T.P. (2010) A cognitive model for the intergenerational transference of alcohol use behaviour. *Addict Behav, 35*, 73–83
[39] Ham, B.J., Lee, M.S., Lee, Y.M., Kim, M.K., Choi, M.J., Oh, K.S., et al. (2005). Association between the catechol O-methyltransferase Val108/158Met polymorphism and alexithymia. *Neuropsychobiology, 52*, 151-4.
[40] Walter, N.T., Montag, C., Markett, S.A., Reuter, M. (2011). Interaction effect of functional variants of the BDNF and DRD2/ANKK1 gene is associated with alexithymia in healthy human subjects. *Psychosom Med., 73*, 23-8.

Chapter 7

Summary and general discussion

The aim of this thesis is to examine the prevalence, the stability, the familial-history correlates and the clinical implications (of high levels) of alexithymia in SUD (Substance Use Disorder) patients. The first topic covers the prevalence of alexithymia in different SUD populations, we are interested in replicating the high prevalence of alexithymia that was found in a previous study with a SUD population in the Netherlands (van Rossum, Laheij, de Doelder, de Jong & Jansen, 2004). The second theme addresses the influence of alexithymia on the outcome results of a mainstream therapy for SUD patients in the Netherlands, i.e., a combination of Cognitive Behavioral Therapy (CBT) and Motivational Interviewing (MI). The third topic covers the stability of alexithymia in SUD patients to determine whether it is a state phenomenon that is related to other state conditions or if it is a stable personality trait. The last research question examines the influence of a Family History of Alcoholism (FHA) on the degree of alexithymia experienced by SUD patients.

Following a description of the concept of alexithymia, this chapter summarizes the major findings of this thesis. Thereafter, the strengths, limitations, clinical implications and suggestions for future research will be discussed.

Alexithymia is predominantly perceived as a personality construct associated with a deficit in the processing and regulation of emotions (Taylor, Bagby & Parker, 1997). Specifically, alexithymia involves having difficulty with identifying and describing feelings, distinguishing these feelings from the bodily sensations of emotional arousal, having constricted imaginative capacities and having an externally oriented cognitive style (Taylor & Bagby, 2004).

The Toronto Alexithymia Scale-20 (TAS-20) is the most frequently used assessment instrument for alexithymia and includes the following 3 factors: (1) difficulty with identifying feelings (DIF), (2) difficulty with describing feelings (DDF), and (3) having externally oriented thinking (EOT) (Bagby, Parker, & Taylor, 1994). Each scale item is measured on a 5-point Likert scale that ranges from "completely disagree" to "completely agree". The TAS-20 demonstrates good test-retest reliability ($r = 0.77$) over a three-week interval (Bagby et al., 1994) and can be analyzed in its entirety or separately according to the 3 components. Alexithymia may be conceptualized as a continuous (Parker, Keefer, Taylor, & Bagby, 2008) or as a categorical variable. Taylor et al. (1997) suggested that a total score of 61 or above indicates alexithymia and that a score of 51 or below indicates a low degree of or the absence of alexithymia. A score between 52 and 60 represents a moderate degree of alexithymia.

Key findings

Prevalence of alexithymia in patients with SUDs

As discussed at the start of this chapter, we were interested in replicating the finding that there was a high prevalence of alexithymia in SUD populations, as was found in a previous study in addiction centers in the Netherlands (van Rossum, Laheij, de Doelder, de Jong & Jansen, 2004). Van Rossum et al. (2004) reported that 54% of the AUD-patients from 4 inpatient detoxification

units, which are affiliated with the NISPA (Nijmegen Institute for Scientist-Practitioners in Addiction), in the eastern and southern parts of the Netherlands were alexithymic, according to the Toronto Alexithymia Scale (TAS-20). However, as described in our introduction, an unusual cut-off score for identifying alexithymia (> 55) was used in this study, given that the conventional cut-off score for alexithymia on the TAS-20 is higher (> 60) (Taylor et al., 1997). This unusual cut-off score may have resulted in overestimation of the number of alexithymic patients.

We measured the prevalence of alexithymia in 3 different inpatient SUD populations. In the first population, 187 heterogeneous SUD patients from 3 inpatient treatment units, which are affiliated with NISPA, were assessed at baseline. These patients were abstinent for at least 4 weeks. The prevalence of alexithymia (TAS-20 > 60) was 37% (de Haan et al., 2011; chapter 2a/b). However, with a cut-off score of 56, the prevalence was 52% (table 1).The second population included 100 homogeneous alcohol dependent or alcohol/drug dependent inpatients from one of the previously mentioned inpatient treatment units. Patients were also abstinent for at least 4 weeks, but measured at a different time compared with the previous study. The prevalence of alexithymia in this sample was 45% (TAS-20 > 60) and 58% with a cut-off score of 56 (de Haan et al., 2012b; chapter 3; table 1). The third population included patients from 4 of these inpatient detoxification units, which are affiliated with NISPA, as in the van Rossum et al. (2004) study. The TAS-20 baseline data were available for 130 heterogeneous SUD patients, of which 42% were alexithymic and 55% with a cut-off score on 56 (de Haan et al., 2014; chapter 5; table 1). When the different prevalence rates are compared with each other based on the cut-off score of 56, no significant differences were found [$\chi^2(3) = 1.01$, $p > 0.5$].

In conclusion, the high prevalence rates reported by van Rossum et al. (2004) were replicated in 3 different SUD populations with the higher cut-off score taken into consideration. We found some preliminary evidence for a reduction in alexithymia, i.e., in the TAS-20 scores, after detoxification (de Haan et al., 2014; chapter 5) and after inpatient CBT treatment (de Haan et al., 2012a; chapter 4). These reductions were not related to withdrawal symptoms (including anxiety and depression) after detoxification (de Haan et al., 2014; chapter 5) or to the type of intervention after CBT (with or without SDMI) (de Haan et al., 2012a; chapter 4). However, the reduction that was evident after CBT was partially related to a reduction in the patients' symptoms of anxiety and depression, as measured by the EuropASI (de Haan et al., 2012a; chapter 4).

Thus, we do not have an explanation for the small reduction in alexithymia scores found in our SUD populations over the course of time. In the previous literature, we found very few arguments for the high prevalence of alexithymia in SUD-populations, apart from a critical discussion regarding the measurement of alexithymia with a self-report instrument such as the TAS-20 (Grabe et al., 2009; Kooiman, Spinhoven & Trijsburg, 2002). One study reported that SUD patients may have inaccurate self-images and may perceive or report themselves as more alexithymic than they actually are (Lindsay & Ciarrochi, 2009).

Moreover, the consistently found high prevalence of alexithymia, as measured with the TAS-20 and described in this thesis, seems not to be consistent in quantity with the descriptions and characteristics of SUD patients in clinical practice. A part of the explanation for this gap could be the lack of familiarity with the concept of alexithymia. However, several years of research on alexithymia in an addiction care facility has shown no change in how often alexithymia has been observed or recorded in the medical files (personal observation).

Table 1. *Prevalence of alexithymia (TAS-20 > 60) and the mean TAS-20 scores for the Dutch SUD-inpatients*

Study	Mean (SD)(N)	Alexithymia (%)	Patient characteristics
Van Rossum et al., 2004	55.8 (26-80)*(84)	53.6**	during detoxification, mixed gender, alcohol dependent, with or without drug dependence
de Haan et al., 2011	55.7 (11.3)(187)	36.9 (51.9**)	abstinent ≥ 4 weeks, mixed gender, alcohol and/or drug dependent
de Haan et al., 2012b	58.0 (10.7)(100)	45.0 (58.0**)	abstinent ≥ 4 weeks, only men, alcohol dependent, with or without drug dependence
de Haan et al., 2014	57.9 (12.9)(130)	42.3 (54.6**)	during detoxification, mixed gender, alcohol and/or drug dependent

*Range, not SD; **TAS-20 > 55; TAS = Toronto Alexithymia Scale

The research question discussed in *chapter 2(a/b)* was, *"Does alexithymia predict therapy-related outcomes in heterogeneous SUD patients after CBT, and is there a moderation of these results as a result of adding shared decision-making (SDM) as a structured therapeutic intervention?"*

We hypothesized that alexithymia would be positively associated with SUD related problems and negatively associated with resulting outcomes. A total of 187 SUD patients were assessed at a baseline and at a 3-month follow-up (FU) with the Dutch version of the TAS-20 and the European Addiction Severity Index (EuropASI). The 3-month FU was following a typical 3-month inpatient CBT as usual (CBT-TAU) intervention or after CBT with a SDM (Shared Decision Making) intervention (CBT-SDMI), as part of a Randomized Controlled Trial (RCT) examining SDM.

We found that 37% of the patients were highly alexithymic (TAS-20 ≥ 61) and that these patients showed greater severity-scores on the EuropASI with regard to the "work, education and income" and "psychiatric" severity domains. Highly alexithymic patients had fewer years of education and were more often unemployed than low-scoring alexithymics. In recently detoxified SUD patients, the incidence of symptoms of depression and anxiety was high, and given their

relationship with alexithymia, a part of this high baseline alexithymia score could be interpreted as alexithymia being partly a state phenomenon. Alexithymia did not predict abstinence at the follow-up. Differences between the baseline high- and low-scoring alexithymic patients were found for the "work, income and education" domain in the CBT-SDMI group and for the "family and social relations" and "drugs" domains in the CBT-TAU group in favor of the highly alexithymic patients. In the CBT-TAU group, patients' TAS-20 dimensional scores were negatively associated with changes in the "physical health" domain but were positively associated with changes in the "drugs", "family and social relations" and "psychiatry" domains.

Overall, highly alexithymic patients improved on the EuropASI change scores as much as or more than the low-scoring alexithymic patients, and alexithymia as a continuous score was predominantly positively associated with these change scores. However, these differences should be interpreted with caution given that a high number of tests were performed.

Reviewing our hypotheses, we can conclude that alexithymia is positively associated with SUDrelated problems but is not negatively associated with resulting outcomes for the 3-month CBT treatment intervention (de Haan, Joosten, Wijdeveld, Boswinkel, van der Palen & De Jong, 2011).

In *chapter 3,* the main research question was, *"Does alexithymia predict therapy-related outcomes in more homogeneous Alcohol Use Disorder (AUD) patients after completing an inpatient treatment program based on CBT?"*

A total of 101 alcohol-dependent inpatients (DSM IV) were assessed with the Mini International Neuropsychiatric Interview for psychiatric disorders, the TAS-20 and the EuropASI. Baseline alexithymia scores, as categorical and continuous variables, were used to compare or relate the baseline demographic and addiction characteristics, the time spent in treatment, abstinence, and the differences in addiction severity at a 1-year follow-up. Consistent with chapter 2, we hypothesized that highly alexithymic patients with AUD would benefit less from treatment compared with low-scoring alexithymic patients.

The prevalence of alexithymia was 45% (TAS-20 $\geq$ 61). The total TAS-20 score correlated negatively with the number of years of education and correlated positively with the "psychiatry" domain of the EuropASI. Alexithymia showed no relation to abstinence, to the time spent in treatment or to changes in the severity of alcohol-related problems according to the EuropASI. Within the patients with co-morbid drug abuse, the highly alexithymic patients improved more than the low-scoring alexithymic patients on the "drugs" domain. However, this result was based on a very small sample (n = 22) and should be interpreted with caution.

Unlike our hypothesis, but consistent with the previous chapter discussing the mixed alcohol and drug inpatient SUD population, our findings confirm, as in chapter 2, that inpatient (highly) alexithymic patients with AUD can benefit from a CBT-oriented treatment. Therefore, alexithymia, as measured by the TAS-20, does not seem to be a negative prognostic factor in the treatment of alcohol, drugs or combined alcohol-drug related disorders (de Haan, Schellekens, van der Palen, Verkes, Buitelaar, & De Jong, 2012b).

Chapter 4 addressed the following research question: "*Is alexithymia a state or trait phenomenon in heterogeneous SUDpatients, based on the absolute and relative stabilities of alexithymia after inpatient CBT treatment, when controlling for anxiety, depression and therapy-specific variables?*"

Due to conflicting research results regarding alexithymia as a state or trait phenomenon, alexithymia as a vulnerability factor for SUDs remains under debate (Haviland, Macmurray, & Cummings, 1988; Pinard, Negrete, Annable, & Audet, 1996; de Timary, Luts, Hers, & Luminet, 2008). Therefore, the absolute and relative stabilities of alexithymia were evaluated in a pre-post design that controlled for several covariates as part of the same RCT that was presented in chapter 2.

Absolute stability refers to mean level differences over time, which indicate whether and in which direction an entire sample or population is changing (Caspi, Roberts, & Shiner, 2005; Roberts, Walton, & Viechtbauer, 2006). However, individual differences in changes reflect deviations from overall mean level patterns. Thus, relative stability, which is defined as the extent to which relative differences between subjects remain unchanged over time (Roberts & DelVecchio, 2000), is an even more important indication of the stability of a trait. Relative stability is reflected in the strength of the test-retest correlation. Assessments were conducted with the TAS-20 and the EuropASI at baseline and follow-up 3 months after the inpatient CBT-intervention that was with or without an SDMI for the 187 SUD patients. Mean level reductions in the total TAS-20 and 2 of its subfactors, as shown by t-tests, demonstrated no absolute stability, but changes in alexithymia differed for low, moderate and highly alexithymic patients. The most obvious change was a reduction in all of the TAS-20 scores in the highly alexithymia group, whereas there were increases in all of the TAS-20 scores in the low alexithymia group. These results could not be explained by a related change in anxiety and/or depression, as measured by the EuropASI "psychiatry" domain.

This phenomenon looks like a regression toward the mean and has not been described in previous research examining the stability in alexithymia. The relative stability of alexithymia, according to intraclass correlations (ICC), was moderate to high for the total population. However, it differed for low, moderate and highly alexithymic patients. In multivariate linear regression models, the change in the EuropASI "psychiatry" domain, which covers anxiety and depression, was related to the change in alexithymia, whereas CBT-related variables were not.

Based on these results on the absolute and relative stability of alexithymia, we concluded that alexithymia is partly a state-dependent phenomenon, yet it is not a stable personality trait in this SUD-population (de Haan, Joosten, Wijdeveld, Boswinkel, van der Palen & De Jong, 2012a).

Elaborating on the topic of alexithymia as a trait or state phenomenon, *chapter 5* examined the absolute and relative stabilities of alexithymia in SUD patients during the phase of detoxification. The corresponding research question was, "*Is alexithymia a state or trait phenomenon in heterogeneous SUD patients during detoxification, based on the absolute and relative stabilities*

of alexithymia in an SUD population, when controlling for withdrawal symptoms that include anxiety and depression?"

The absolute and relative stabilities of alexithymia were assessed with the TAS-20 and its subscales for 101 SUD patients at two time-points during a 3-week inpatient detoxification period. We controlled for withdrawal symptoms with the Subjective Withdrawal Scale (SWS) and for personality disorder traits with the Assessment of the DSM-IV Personality Disorders Questionnaire (ADP-IV).

The TAS-20 baseline data were available for 130 patients, of which 42% were highly alexithymic. Highly alexithymic patients did not differ from low or moderate alexithymic patients in terms of gender, age, country of birth, relationship status, employment, education or the type of substance dependence. Highly alexithymic patients exhibited a greater preference for poly-substance use compared with moderate and low alexithymic patients. Highly alexithymic patients scored higher on the total SWS-scale, the SWS-anxiety and the SWS-depression components compared with moderate and low alexithymic patients. Across all of the ADP-IV dimensional personality disorder measures, highly alexithymic patients scored higher compared with low alexithymic patients, and patients' total TAS-20 scores were also related to these measures (i.e., ADP-IV total, cluster A-, cluster B-, cluster C personality traits and depressive personality). The relative stabilities of the total TAS-20 and its subscales were moderate to high, and remarkable differences were evident, although not significant, between the baseline low, moderate, and highly alexithymic patients when taking into account 95% confidence intervals.

A small reduction in the mean levels of the total TAS-20 scores and those for one subscale revealed the absence of absolute stability. The levels of alexithymia were unrelated to changes in withdrawal symptoms, including anxiety and depression. The differences in the changes of the alexithymia scores between the low, moderate, and highly alexithymic patients from baseline to follow-up indicated, as in the previous chapter, a strong regression to the mean.

The findings in this chapter suggest that alexithymia in SUD-patients during detoxification, as measured by the TAS-20, is both a state and trait phenomenon, and it does not appear to be related to changes in anxiety and depression, in contrast to the results, presented in chapter 4 (de Haan, van der Palen, Wijdeveld, Buitelaar & De Jong, 2014).

In *chapter 6,* the final research question addressed was, "*Does a family history of alcoholism (FHA) predict higher levels of alexithymia in SUD patients when controlling for disturbed family functioning?"*

To gain more insight into the relation between alexithymia and SUDs, we investigated whether familial vulnerability to alcoholism relates to the presence and severity of alexithymia in SUD patients. Given that alexithymia may be a potential risk factor for SUDs, insight regarding this relation could aid the development of more effective treatments for SUDs. A maternal, paternal and total composite measure of FHA was developed for the inpatient SUD patients (n = 187) who were discussed in chapters 2 and 4. Compared to moderate and low alexithymic SUD-

patients, highly alexithymic SUD patients were more likely to have fathers with alcohol problems, a finding that was not evident for mothers with alcohol problems. The patients' composite FHA-scores were significantly associated with alexithymia. However, only a paternal FHA, which is independent of disturbed family functioning, related to the degree of alexithymia, especially with regard to the DIF-factor, as measured by the TAS-20.

As a conclusion of the chapter we suggested that alexithymia could mediate the familiality of alcoholism or SUD in the paternal line, because of the relation we found between a paternal FHA and a higher degree of alexithymia in SUD patients (de Haan, Joosten, de Haan, Schellekens, Buitelaar, van der Palen & De Jong, 2013).

Strengths and limitations

Some strengths and innovative approaches of this thesis are noteworthy. First, we focused our study with 2 main hypotheses on different populations with very similar outcomes. An innovative addition of our study is that we, after dividing the whole population into 3 levels of alexithymia, as suggested by Taylor et al. (1997), compared these levels with regard to their absolute and relative stabilities.

Another innovation of our study is the use of a continuous score for the FHA in chapter 6, which, to our knowledge, is not often the case. A continuous score was calculated in Milne et al.'s (2009) study, based on Vandeleur et al.'s (2008) recommendations, such that each participant's family history of disorders was calculated according to the proportion of members in the family who had a positive history of disorders. Second degree relatives were counted as "half" of a family member for the purposes of calculating this proportion (Milne et al., 2009). Given that our family member data were from the EuropASI, which only had a limited number of family members involved, we chose to use a summation based on the genealogical classification of the patients' family members instead of a medical classification, which may have been more appropriate. An advantage to the genealogical approach is that the FHA of the parents has a greater influence than that of other first degree family members, which is consistent with a cognitive model of intergenerational transference of alcohol use behavior (Campbell & Oei, 2010).

However, the results of our studies should be interpreted in the context of some limitations as well, including the absence of systematic urine or blood samples to confirm abstinence, particularly with regard to the studies presented in chapters 2, 3 and 4. Additionally, we did not measure depression and anxiety or the change in depression and anxiety symptoms with sensitive instruments such as the Hamilton Depression Rating Scale (Hamilton, 1967), the BDI (Beck et al., 1961) or the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1983).

Chapters 2, 3 and 4 discussed our treatment interventions, which were primarily group-based. We did not check how much time patients' spent on individual interventions and coaching, and we did not record the differences in outpatient (after inpatient) treatments. As a result,

the possibility that highly alexithymic SUD patients received more individual attention than low alexithymics cannot be ruled out, which could have biased our results.

Although the TAS-20 is the most widely used measurement for alexithymia, it can be criticized for being a self-report scale and for its psychometric shortcomings with regard to alcohol dependent populations (Thorberg et al., 2010). A number of researchers have questioned whether a self-report instrument can adequately assess deficits that alexithymic patients are not aware of (Grabe et al., 2009; Kooiman, Spinhoven & Trijsburg, 2002). It is therefore advisable to perform multimethod alexithymia assessments with an observer scale (Dorard et al., 2008).

In chapter 6, family and social functioning, as measured by the EuropASI, with a particular focus on the relation between parents and patients, were not specific enough to distinguish unshared and shared environmental issues, as they were rather global. In the same chapter, we developed a new measure of total FHA that was related to the Early Onset of Alcoholism (EOA), which is unlike our measure of paternal FHA. Familial alcoholism with regard to the EOA is typically evident in the paternal line (Leggio, Kenna, Fenton, Bonenfant & Swift, 2009). Next, we used a family history approach to collect information regarding family members from our patients, rather than from the family members themselves.

Clinical implications

Lumley et al. (2007) showed that alexithymia is generally related to negative treatment outcomes but that sometimes alexithymia does not interfere with the outcome results (Rufer et al., 2004; Spek, Nyklicek, Cuijpers & Pop, 2008). In 3 studies, alexithymia was associated with positive results when very structured forms of therapy or externally focused interventions (Lumley et al., 2007) were used.

Our results confirm that highly alexithymic SUD patients can benefit from structured CBT. They may benefit even more when structured motivational aspects in the form of SDM are added (de Haan et al, 2011; chapter 2). The addition of a structured motivational intervention, such as SDM, improves the outcome results for highly alexithymic SUD patients. However, this improvement is, to a slightly lesser extent, also observed in the low or non-alexithymic SUD patients. Highly alexithymic SUD patients benefit from regular CBT at least as much as non-alexithymic SUD patients (de Haan et al, 2011; de Haan et al. 2012b; chapter 2 and 3).

The predictive value of measuring SUD patients' baseline alexithymia with the TAS-20 before they participate in inpatient treatment is of very little clinical or therapeutical importance. Previous studies have questioned the validity of the TAS-20 with SUD populations due to problematic factorial models, particularly with regard to the EOT-factor (Cleland et al., 2005; Kooiman et al., 2002; Thorberg et al., 2010). Our results, including the regression to the mean phenomenon found in the 2 stability studies (de Haan et al., 2012a; de Haan et al., 2014; chapters 4 and 5), corroborate these concerns about the validity of the TAS-20 within SUD populations.

In conclusion, according to our results, there is no need to assess SUD patients' alexithymia with the TAS-20 at baseline before they participate in an inpatient CBT-intervention or to make therapeutic adjustments for highly alexithymic SUD patients based on the TAS-20. When a choice is available, a more structured form of intervention is recommended for highly alexithymic SUD patients. However, this approach is also preferred for low or non-alexithymic patients so that all SUD patients can benefit from this form of intervention.

Based on our results as described in Chapter 2 to 6, the importance of the concept of alexithymia for SUD patients and addiction could be doubted and I will briefly discuss this issue.

First of all, alexithymia has its origin in patients with psychosomatic disorders (Sifneos, 1973) and has as such also a face validity in the addiction field. A part of the SUD patients do show alexithymic characteristics. However, the consistently found high prevalence of alexithymia, as measured with the TAS-20 and described in this thesis, seems, as indicated in this summary, not to be consistent in quantity with the descriptions and characteristics of SUD patients in clinical practice. Next, as also mentoned before, we do not have satisfactory explanations for the changes in alexithymia scores in our SUD populations over the course of time.

As alexithymia, measured with the TAS-20, did not have major clinical implications, i.e. is not related to treatment outcome and did not show optimal stability as a personality trait, it is justified to seriously doubt the validity of the concept of alexithymia or the TAS-20 as a measure for alexithymia in SUD patients. Our findings have sufficiently demonstrated that measuring alexithymia or affect dysregulation in SUD patients only with the TAS-20 is inadvisable. However, as we did measure alexithymia only with the TAS-20, it is too early to reject alexithymia as a concept in understanding affect dysregulation in SUD patients. In the next paragraph I will try to systematically describe which recommendations for future research are advised to further examine the validity of alexithymia in SUD patients.

Recommendations for future research

Given that the validity of the TAS-20 in SUD populations is questionable (Cleland et al., 2005; Kooiman et al., 2002; Thorberg et al., 2010; de Haan et al., 2012a; de Haan et al., 2014; chapters 4 and 5), research on alexithymia in SUD-populations with other measurement instruments, such as multimethod assessments that include an observer scale, is strongly advised (Dorard et al., 2008).

Other available instruments that serve this purpose are the Bermond Vorst Alexithymia Questionnaire (BVAQ) (Vorst & Bermond, 2001), which is another self-report scale; the Toronto Structured Interview for Alexithymia (TSIA) (Bagby, Taylor, Parker & Dickens, 2006); and the Observer Alexithymia Scale (OAS) (Haviland, Warren, Riggs & Gallacher, 2001). The characteristic features of alexithymia have been operationalized differently according to these instruments. Therefore, research using a combination of these instruments is needed with SUD populations to

compare whether they are consistent with regard to the original features of alexithymia, as defined by Sineos (1973). In addition, research examining the construct validity of these instruments is recommended, in particular when measuring a limited fantasy life and the inclination toward an externally oriented way of thinking, as the TAS-20 fails to adequately cover these components (Kooiman et al., 2002; Thorberg et al., 2010).

Another interesting research direction with regard to the construct validity of these instruments and the concept of alexithymia would be to develop a more qualitative research project examining the changes of alexithymia scores. An investigation into the clinical relevance of small and large changes in the measurement of alexithymia could clarify the meanings of these changes for patients, relatives and counselors. To our knowledge, no research has been conducted with SUD-populations on this topic. It is not clear how changes in affect regulation in relation to alexithymia are experienced by patients, relatives and counselors, nor is it clear how much change is necessary before it is noticed by the different alexithymia instruments. This information could also be helpful for clarifying the differences in the state and trait debate for alexithymia. How do patients, their relatives and their treatment providers notice changes in alexithymia during times of (extreme) stress, anxiety or depression compared with experiencing a more stable alexithymic personality trait?

Within the context of absolute and relative stabilities, it would be interesting to compare the changes in alexithymia, particularly with regard to the regression to the mean phenomenon, with changes in other personality constructs such as the five-factor model of personality (Costa & McCrae, 1992). If changes in the stability of alexithymia and one or more of these five factors are related, this would support the argument that alexithymia is a personality trait.

To determine the extent to which our specific findings regarding the absolute and relative stabilities of alexithymia are due to the use of the TAS-20, we propose the need to perform future research examining the stability concept with the aforementioned instruments, such as the Bermond Vorst Alexithymia Questionnaire (Vorst & Bermond, 2001), the Observer Alexithymia Scale (Haviland et al., 2001), and the Toronto Structured Interview for Alexithymia (Bagby et al., 2006).

Given that direct or mediating involvement of several brain structures, such as the corpus callosum, cingulate cortex, amygdala, orbitofrontal cortex and insula, in alexithymia has been demonstrated by neuroimaging (Wingbermühle, Theunissen, Verhoeven, Kessels & Egger, 2012), the combination of qualitative and instrument studies is highly recommended for studying the stability of alexithymia with neuroimaging in combination with neuropsychological or neurobiological tests, directed to the above-mentioned brain structures. This kind of research also could support investigations into the aspects of alexithymia that overlap with other disorders than SUDs. Alexithymia is not only common in SUDs, but also in anxiety-, autism spectrum-, eating-, mood-, personality- and somatoform disorders (Taylor et al, 1997). An example is research that elaborates on the similarities and differences of patients with autism spectrum

disorders and different degrees of alexithymia (Bird et al., 2010; Bird & Cook, 2013). Differences and similarities in alexithymia and its sub-factors between psychiatric disorders, as measured with the different alexithymia instruments in combination with the neurobiological and –psychological oriented tests, can help to establish the construct validity of alexithymia. Because of the overlap of alexithymia between psychiatric disorders it is also interesting to investigate if the alexithymia construct could be an endophenotype, i.e. intermediate between genotype and phenotype, like other constructs as impulsivity, and have, as such, a place in the reorganization of psychiatric nosology.

To validate our finding (chapter 6) that alexithymia may mediate the familiality of alcoholism or SUDs in the paternal line, structural equation modeling should be performed with larger datasets that include twins and extended family. This approach would provide data on substance use and alexithymia for all of the patients' family members to further investigate more causal models that could explain this relationship. Furthermore, this approach may aid in testing the candidate genes for associations between genetic polymorphisms that have been shown to be related to alexithymia and alcoholism (Ham et al., 2005; Walter, Montag, Markett & Reuter, 2011).

In conclusion, these recommendations for future research highlight that alexithymia, as a form of disturbed affect regulation in SUD, is still a challenging topic to study. However, the outcome of these future studies is difficult to predict in the sense of gaining a better understanding of SUDs or in determining whether alexithymia is a relevant risk factor for SUDs. To date, alexithymia has yielded too little results regarding these two purposes. Alexithymia will only prove to be an important clinical concept in SUDs, if the above-mentioned multi-method measurement yields that alexithymia is affecting the acquisition, severity or treatment outcomes, such as the relapse risk, in SUDs. However, given that the study of alexithymia may help us better understand affect regulation and, in this way, may optimize treatment in SUD patients, it is still a topic that matters.

References

Bagby, R.M., Parker, J.D. & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale--I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38, 23-32

Bagby, R.M., Taylor, GJ., Parker, J.D.A. & Dickens, S.E.(2006) The development of the Toronto Structured Interview for Alexithymia: Item selection, factor structure, reliability and concurrent validity. Psychotherapy and psychosomatics, 75 (1), 25-39

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., Erbaugh, J., 1961. An inventory for measuring depression. Archives of General Psychiatry 4, 561–571.

Bird, G., Silani, G., Brindley, R., White, S., Frith, U. & Singer, T. (2010). Empathic brain responses in insula are modulated by levels of alexithymia but not autism. Brain, 133, 1515-1525

Bird, G. & Cook, R. (2013). Mixed emotions: the contribution of alexithymia to the emotional symptoms of autism. Translational Psychiatry, 3, e285; doi:10.1038/tp.2013.61

Campbell, J.M. & Oei, T.P. (2010). A cognitive model for the intergenerational transference of alcohol use behavior. Addictive behaviors, 35, 73-83.

Caspi, A., Roberts, B.W. & Shiner, R.L. (2005). Personality development: stability and change. *Annual Review of Psychology*, 453-484.

Cleland, C., Magura, S., Foote, J., Rosenblum, A. & Kosanke, N. (2005). Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. Journal of Psychosomatic Research 58, 299–306.

Costa, P.T.,Jr. & McCrae, R.R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) manual. Odessa, FL: Psychological Assessment Resources.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P.B., van der Palen, J. & De Jong, C.A.J. (2011). Cognitive behavioral treatment is as effective in high- as in low-scoring alexithymic patients with substance-related disorders. Psychotherapy and Psychosomatics 80, 254-255.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P., van der Palen., J. & De Jong, C.A.J. (2012a). Alexithymia is not a stable personality trait in patients with substance use disorders. Psychiatry Research 198, 123-129.

de Haan, H.A., Schellekens, A.F., van der Palen, J., Verkes, R.J., Buitelaar, J.K. & De Jong, C.A. (2012b). The level of alexithymia in alcohol-dependent patients does not influence outcomes after inpatient treatment. American Journal of Drug and Alcohol Abuse 38, 299-304.

de Haan, H.A., Joosten, E.A.G, de Haan, L., Schellekens, A.F., Buitelaar, J.K., van der Palen, J. & De Jong, C.A.J. (2013). A family history of alcoholism relates to alexithymia in substance use disorder patients. Comprehensive Psychiatry 54 (7), 911-917.

de Haan, H.A., van der Palen, J., Wijdeveld, A.G.M., Buitelaar, J.K. & De Jong, C.A. (2014). Alexithymia in patients with substance use disorders: state or trait? Psychiatry Research 216, 137-145.

de Timary, P., Luts, A., Hers, D. & Luminet, O. (2008) Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. *Psychiatry Research*, 157,105-113.

Dorard, G., Berthoz, S., Haviland, M.G., Phan, O., Corcos, M. & Bungener, C. (2008). Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Comprehensive Psychiatry, 49, 585-592.

Ham, B.J., Lee, M.S., Lee, Y.M., Kim, M.K., Choi, M.J., Oh, K.S., et al. (2005). Association between the catechol O-methyltransferase Val108/158Met polymorphism and alexithymia. Neuropsychobiology, *52*, 151-4.

Hamilton, M., 1967. Development of a rating scale for primary depressive illness. The British Journal of Social and Clinical Psychology 6, 278–296.

Haviland, M.G., Macmurray, J.P. & Cummings, M.A. (1988). The relationship between alexithymia and depressive symptoms in a sample of newly abstinent alcoholic inpatients. *Psychotherapy and Psychosomatics*, 49, 37-40.

Haviland, M.G., Warren, W.L., Riggs, M.L. & Gallacher, M. (2001). Psychometric properties of the Observer Alexithymia Scale in a clinical sample. Journal of Personality Assessment 77, 176–186.

Kooiman, C.G., Spinhoven, P. & Trijsburg, R.W.(2002) The assessment of alexithymia - a critical review of the literature and a psychometric study of the Toronto alexithymia scale-20. Journal of Psychosomatic Research, 53, 1083-1090.

Leggio, L., Kenna, G.A., Fenton, M., Bonenfant, E., & Swift, R.M. (2009). Typologies of alcohol dependence. From Jellinek to genetics and beyond. Neuropsychological Review, 19, 115-29

Lindsay, J. &, Ciarrochi, J. (2009). Substance abusers report being more alexithymic than others but do not show emotional processing deficits on a performance measure of alexithymia. Addiction Research & Theory, 17, 315-321.

Lumley, M.A., Neely, L.C. & Burger, A.J. (2007). The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. Journal of Personality Assessment 89, 230-246.

Milne, B.J., Caspi, A., Harrington, H., Poulton, R., Rutter, M. & Moffitt, T.E. (2009). Predictive value of family history on severity of illness: the case for depression, anxiety, alcohol dependence, and drug dependence. Archives of General Psychiatry, 66 (7), 738 -747

Parker, J.D.A., Keefer, K.V., Taylor, G.J. & Bagby, R.M. (2008) Latent structure of the alexithymia construct: a taxonomic investigation. *Psychological assessment*, 20, 385-396.

Pinard, L., Negrete, J.C., Annable, L. & Audet, N. (1996). Alexithymia in substance abusers - Persistence and correlates of variance. *American Journal on Addictions*, 5,32-39.

Roberts, B.W. & DelVecchio, W.F. (2006). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological Bulletin,* 126, 3-25.

Roberts, B.W., Walton, K.E. & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological Bulletin*, 132, 1-25

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112.

Rufer, M., Hand, I., Braatz, A., Alsleben, H., Fricke, S. & Peter, H. (2004). A prospective study of alexithymia in obsessive-compulsive patients treated with multimodal cognitive-behavioral therapy. Psychotherapy and Psychosomatics,73, 101-106.

Spek, V., Nyklicek, I., Cuijpers, P. & Pop, V. (2008) Alexithymia and cognitive behaviour therapy outcome for subthreshold depression. Acta Psychiatrica Scandinavica 2008, 118, 164-167.

Spielberger, C.D., Gorssuch, R.L., Lushene, P.R., Vagg, P.R., & Jacobs, G.A (1983). Manual for the State-Trait Anxiety Inventory. Consulting Psychologists Press, Inc.

Taylor, G. J., Bagby, R. M., Parker, J. D. A., & (1997). *Disorders of affect regulation*. Cambridge: Cambridge university press.

Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics, 73*(2), 68-77.

Thorberg, F.A., Young, R.M., Sullivan, K.A., Lyvers, M., Hurst, C., Connor, J.P. & Feeney, G.F. (2010). A confirmatory factor analysis of the Toronto Alexithymia Scale (TAS-20) in an alcohol-dependent sample. Psychiatry Research, 178(3), 565–567.

Vandeleur, C.L., et al. (2008) Inter-informant agreement and prevalence estimates for substance use disorders: direct interview versus family history method. Drug and Alcohol Dependence, 92, 9-19.

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112

Vorst, H.C.M., Bermond, B., 2001. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. Personality and Individual Differences 30, 413–43

Walter, N.T., Montag, C., Markett, S.A. & Reuter, M. (2011). Interaction effect of functional variants of the BDNF and DRD2/ANKK1 gene is associated with alexithymia in healthy human subjects. Psychosomatic Medicine, 73, 23-8.

Wingbermühle, E., Theunissen, H., Verhoeven, W.M.A., Kessels, R.P.C. & Egger, J.I.M. (2012). The neurocognition of alexithymia: evidence from neuropsychological and neuroimaging studies. Acta Neuropsychiatrica, 24, 67–80

Nederlandse samenvatting

Dit proefschrift heeft als doel om de prevalentie, de stabiliteit, de relatie met een familiaire belasting voor alcoholproblemen en de klinische gevolgen van (een hoge mate) van alexithymie bij verslaafde patienten te onderzoeken. Allereerst wordt ingegaan op de prevalentie van alexithymie in verschillende verslaafde populaties. We waren benieuwd of we de hoge prevalentie, die in een eerdere studie bij een verslaafde populatie in Nederland werd gevonden, konden repliceren (van Rossum, Laheij, de Doelder, de Jong & Jansen, 2004). Het tweede onderwerp gaat over de invloed van alexithymie op de behandelresultaten van de meest gebruikte vorm van therapie voor verslaafde patienten in Nederland, namelijk een combinatie van cognitieve gedragstherapie (CGT) en motiverende gespeksvoering. Het derde onderwerp behandelt de stabiliteit van alexithymie bij verslaafde patienten. De vraag is of het om een tijdelijk toestandsbeeld ("state") gaat, gerelateerd aan andere tijdelijke toestandsbeelden of dat het een stabiel persoonlijkheidskenmerk ("trait") betreft. Met de laatste onderzoeksvraag wordt de invloed van een familiaire belasting voor alcoholproblemen op de mate van alexithymie bij verslaafde patienten bestudeerd.

Na een beschrijving van het begrip alexithymie, vat dit hoofdstuk de belangrijkste bevindingen van het proefschrift samen. Vervolgens worden de sterke kanten, beperkingen, de klinische implicaties en aanbevelingen voor verder onderzoek besproken.

Alexithymie wordt vooral gezien als een persoonlijkheidsconcept, namelijk een gebrek in het verwerken en reguleren van emoties (Taylor, Bagby & Parker, 1997). Meer specifiek omschreven, kenmerkt alexithymie zich door moeite met het identificeren en beschrijven van gevoelens, het moeilijk gevoelens van lichamelijke gewaarwordingen (bij arousal) kunnen onderscheiden, een beperking in het imaginaire vermogen en de aanwezigheid van een extern georiënteerde cognitieve stijl (Taylor & Bagby, 2004).

De Toronto Alexithymia Scale-20 (TAS-20) is het meest gebruikte meetintrument voor alexithymie en bestaat uit drie factoren: (1) moeite met het identificeren van gevoelens (DIF), (2) moeite met het beschrijven van gevoelens (DDF), en (3) een extern georiënteerde wijze van denken (EOT) (Bagby, Parker, & Taylor, 1994). Elk item wordt met behulp van een 5-punts schaal gemeten, variërend van "volledig niet mee eens" tot "volledig mee eens". De TAS-20 heeft een goede test-hertest betrouwbaarheid (r = 0.77) over een tijdsbestek van drie weken (Bagby et al., 1994) en kan in zijn geheel geanalyseerd worden of apart, overeenkomstig de drie factoren. Alexithymie kan als een continue of categorale variabele worden geconceptualiseerd (Parker, Keefer, Taylor, & Bagby, 2008). Taylor e.a. (1997) hebben gesuggereerd dat een score van 61 of hoger op (een hoge mate van) alexithymie duidt en een score van 51 of lager op een lage mate of afwezigheid van alexithymie. Een score van 52 tot en met 60 duidt op een beperkte mate van alexithymie.

Belangrijkste bevindingen

Prevalentie van alexithymie bij verslaafde patiënten

Zoals aan het begin van dit hoofdstuk is aangegeven, waren we benieuwd of we de hoge prevalentie, die in een eerdere studie bij verslaafde patiënten in Nederland werd gevonden (van Rossum, Laheij, de Doelder, de Jong & Jansen, 2004), konden repliceren. Van Rossum e.a. beschreven dat 54% van de alcoholafhankelijke patiënten afkomstig uit vier klinische detoxificatie afdelingen, verbonden aan het NISPA (Nijmegen Institute for Scientist-Practitioners in Addiction), volgens de TAS-20 alexithym was. In deze studie werd echter, zoals in de introductie beschreven, een ongebruikelijke cut-off score gebruikt voor (hoge) alexithymie (> 55) in plaats van de gebruikelijke score om met de TAS-20 alexithymie vast te stellen (>60) (Taylor et al., 1997). Deze ongebruikelijke cut-off score kan in een overschatting van het aantal (hoog) alexithyme patiënten hebben geresulteerd.

We hebben de prevalentie van alexithymie in drie verschillende verslaafde populaties gemeten. Allereerst werden 187 (qua middelen) heterogeen verslaafde patiënten afkomstig uit drie klinische behandelafdelingen, verbonden aan het NISPA, bij de start van een klinische behandeling beoordeeld. Deze patiënten waren tenminste vier weken abstinent. De prevalentie van alexithymie (TAS-20 > 60) was 37% (de Haan e.a., 2011; hoofdstuk 2a/b). Bij een cut-off score van 56, was de prevalentie echter 52% (tabel 1). De tweede populatie bestond uit 100 alcoholafhankelijke patiënten, al dan niet in combinatie met andere middelen, afkomstig uit één van de bovengenoemde afdelingen. Deze patiënten waren ook tenminste vier weken abstinent. Het gaat hier om andere patiënten dan uit de eerste studie. De prevalentie van alexithymie in deze studie was 45% (TAS-20 > 60) en 58% bij een cut-off score van 56 (de Haan e.a., 2012b; Hoofdstuk 3; tabel 1). De derde populatie bestond uit patiënten uit vier klinische detoxificatie afdelingen, verbonden aan het NISPA, dezelfde als beschreven in de van Rossum e.a. (2004) studie. TAS-20 gegevens waren voorhanden van 130 (qua middelen) heterogeen verslaafde patiënten, van wie 42% alexithym was (TAS-20 > 60) en 55% bij een cut-off score van 56 (de Haan e.a., 2014; Hoofdstuk 5; tabel 1). Bij het onderling vergelijken van de verschillende prevalentie percentages, gebaseerd op een cut-off score van 56, werden geen significante verschillen gevonden. *[$\chi^2(3) = 1.01$, $p > 0.5$].*].

Als conclusie kunnen we vaststellen dat de hoge prevalentie van alexithymie, zoals gevonden door van Rossum e.a. (2004) werd gerepliceerd in drie verschillende verslaafde populaties. Vervolgens vonden we voorlopige aanwijzingen voor een daling van alexithymie, dat wil zeggen de TAS-20 scores, na detoxificatie (de Haan e.a., 2014; hoofdstuk 5) en na een klinische CGT georiënteerde behandeling (de Haan e.a., 2012a; hoofdstuk 4). Deze reducties waren bij detoxificatie niet gerelateerd aan onthoudingsverschijnselen (inclusief angst- en depressieve symptomen) (de Haan e. a., 2014; hoofdstuk 5) of, gedurende een klinische behandeling, aan het wel of niet combineren van CGT met een gestructureerde interventie als Shared Decision Making

(SDM) (de Haan e.a., 2012a; hoofdstuk 4). De vermindering in alexithymie na een klinische CGT-behandeling was deels wel gerelateerd aan een daling van angst- en depressieve symptomen, gemeten met de EuropASI (de Haan e. a., 2012a; hoofdstuk 4).

We hebben geen goede verklaring voor de geringe vermindering van alexithymie scores, die we na verloop van tijd bij onze verslaafde populaties vonden. In de literatuur zijn ook weinig argumenten gevonden voor de hoge prevalentie van alexithymie in verslaafde populaties, los van de kritische discussie over het adequaat meten van alexithymie met behulp van een zelfbeoordelingsinstrument (Grabe e.a., 2009; Kooiman, Spinhoven & Trijsburg, 2002). In één studie wordt beschreven dat verslaafde patiënten een onjuist zelfbeeld kunnen hebben en zichzelf als meer alexithym beschouwen of beschrijven dan ze werkelijk zijn (Lindsay & Ciarrochi, 2009).

Bovendien lijkt de consequent gevonden hoge prevalentie van alexithymie, gemeten met de TAS-20, en beschreven in dit proefschift, niet qua kwantiteit in overeenstemming met de beschrijvingen en karakteristieken van verslaafde patiënten in de praktijk. Een deel van dit verschil zou verklaard kunnen worden door de onbekendheid met het concept alexithymie. Aan de andere kant blijkt dat vele jaren onderzoek naar alexithymie in een instelling voor verslavingszorg geen of nauwelijks verandering laat zien in hoe vaak alexithymie in de patiëntendossiers is vastgesteld of beschreven (persoonlijke observatie).

Tabel 1. *Prevalentie van alexithymie (TAS-20 > 60) en de gemiddelde TAS-20 scores voor verslaafde patiënten uit Nederland*

Studie	Gemiddelde (SD)(N)	Alexithymie (%)	Patiënt kenmerken
Van Rossum e.a., 2004	55.8 (26-80)*(84)	53.6**	tijdens detoxificatie, gemengd qua geslacht, alcoholafhankelijk, met of zonder drugafhankelijkheid
de Haan e.a., 2011	55.7 (11.3)(187)	36.9 (51.9**)	abstinent ≥ 4 weeks, gemengd qua geslacht , alcohol- en/of drugafhankelijk
de Haan e.a., 2012b	58.0 (10.7)(100)	45.0 (58.0**)	abstinent ≥ 4 weeks, alleen mannen, alcoholafhankelijk, met of zonder drugafhankelijkheid
de Haan e.a., 2014	57.9 (12.9)(130)	42.3 (54.6**)	tijdens detoxificatie, gemengd qua geslacht, alcohol- en/of drugafhankelijk

*Range, geen SD; **TAS-20 > 55; TAS = Toronto Alexithymia Scale

De onderzoeksvraag, die in *hoofdstuk 2(a/b)* behandeld wordt, is: *"voorspelt alexithymie therapie-gerelateerde behandeluitkomsten na een CGT behandeling bij (qua middelen) heterogeen verslaafde patiënten en worden deze resultaten beïnvloed door het toevoegen van SDM als een gestructureerde therapeutische interventie?"*

We veronderstelden dat alexithymie positief geassocieerd zou zijn met verslavinggerelateerde problemen en negatief geassocieerd met behandeluitkomsten. Hiervoor werden 187 verslaafde patiënten beoordeeld bij de start van een klinische behandeling en bij follow-up met de Nederlandse versie van de TAS-20 en de European Addiction Severity Index (EuropASI). De follow-up na drie maanden volgde op een klinische CGT-interventie met een SDM-interventie (CBT-SDM) of zonder deze interventie (CBT-TAU), als onderdeel van een Randomized Controlled Trial (RCT) naar SDM.

We vonden dat 37% van de patiënten hoog alexithym was (TAS-20 > 60) en deze patiënten scoorden hoger op de EuropASI onderdelen "werk, opleiding en inkomen" en "psychisch-emotionele klachten". Hoog alexithyme patiënten hadden minder jaren opleiding genoten en waren vaker werkloos dan laag alexithyme patiënten. In recent gedetoxificeerde verslaafde patiënten zijn er vaak angst- en depressieve klachten, en vanwege de mogelijke relatie hiervan met alexithymie, zou een deel van de hoge baseline alexithymie score als een "state" geïnterpreteerd kunnen worden. Alexithymie was geen voorspeller van abstinentie bij follow-up. Verschillen tussen de op baseline hoog of laag scorende alexithyme patiënten werden gevonden voor de onderdelen "werk, opleiding en inkomen" in de CGT-SDM groep en voor de onderdelen "familie en sociale relaties" en "drugs" in de CGT-TAU groep ten gunste van de hoog alexithyme patiënten. In de CGT-TAU groep waren de (dimensionele) TAS-20 scores negatief geassocieerd met verbeteringen op het onderdeel "lichamelijke gezondheid", maar positief geassocieerd met verbeteringen op de onderdelen "drugs, "familie en sociale relaties" en "psychisch-emotionele klachten".

Globaal bekeken verbeterden hoog alexithyme patiënten op de EuropASI scores dus even goed of zelfs beter dan de laag alexithyme patiënten. Alexithymie was ook als een continue score grotendeels positief geassocieerd met deze verbeterscores. Deze verschillen moeten echter voorzichtig geïnterpreteerd worden, gezien het grote aantal testen dat werd verricht.

In overeenstemming met onze hypothesen, kunnen we concluderen dat alexithymie inderdaad positief geassocieerd is met de ernst van verslavinggerelateerde problemen, maar, tegen de verwachting in, niet negatief geassocieerd met de behandeluitkomsten na drie maanden klinische CGT-behandeling (de Haan, Joosten, Wijdeveld, Boswinkel, van der Palen & De Jong, 2011).

In *hoofdstuk 3* is de hoofdonderzoeksvraag: *"voorspelt alexithymie behandelgerelateerde uitkomsten bij alcoholafhankelijke patiënten na een klinische CGT behandeling?"*

In totaal werden 101 alcohol afhankelijke patiënten beoordeeld met de Mini International Neuropsychiatric Interview (MINI) voor psychiatrische stoornissen, de TAS-20 en de EuropASI. Baseline demografische en verslavingskenmerken, de duur van de behandeling, abstinentie en de ernst in verslavingsernst na één jaar follow-up werden gebruikt om met baseline alexithymie scores, zowel categorale als continue variabelen, te vergelijken of te correleren. In overeenstemming met hoofdstuk 2, hadden we als hypothese dat hoog alexithyme patiënten met alcoholafhankelijkheid minder zouden profiteren van de behandeling dan laag alexithyme patiënten.

De prevalentie van (hoge) alexithymie was 45% (TAS-20 > 60). De TAS-20 score correleerde negatief met het aantal jaren opleiding en positief met de "psychisch-emotionele klachten" sectie van de EuropASI. Alexithymie was niet gerelateerd aan abstinentie, de tijd doorgebracht in behandeling of veranderingen in ernst van alcohol gerelateerde problemen (EuropASI). Van de alcohol afhankelijke patiënten met co-morbide drugsproblematiek, verbeterden de hoog alexithyme patiënten op de sectie "drugs" meer dan de laag alexithyme patiënten. Dit resultaat was echter gebaseerd op een erg kleine onderzoeksgroep (n = 22) en moet daarom met enig voorbehoud worden geïnterpreteerd.

In tegenstelling tot onze hypothese, maar in overeenstemming met de bevindingen uit het vorige hoofdstuk, bevestigen onze bevindingen dat hoog alexithyme alcoholafhankelijke patiënten kunnen profiteren van een klinische CGT-georiënteerde behandeling. Alexithymie, gemeten met de TAS-20, lijkt daarom geen negatief voorspellende factor te zijn voor de behandeling van alcohol-, drugs- of gecombineerde alcohol-drugs gerelateerde stoornissen (de Haan, Schellekens, van der Palen, Verkes, Buitelaar & De Jong, 2012b).

Hoofdstuk 4 behandelt de volgende onderzoeksvraag: *"is alexithymie een "state"of "trait" fenomeen bij (qua middelen) heterogene, verslaafde patiënten, gebaseerd op de absolute en relatieve stabiliteit van alexithymie na een klinische CGT-behandeling, gecontroleerd voor angst- en depressieve klachten en therapie-specifieke variabelen?"*

Vanwege tegenstrijdige onderzoeksresultaten ten aanzien van alexithymie als een "state" of "trait" fenomeen, blijft er discussie over alexithymie als een mogelijke kwetsbaarheidsfactor voor verslaving (Haviland, Macmurray, & Cummings, 1988; Pinard, Negrete, Annable, & Audet, 1996; de Timary, Luts, Hers, & Luminet, 2008). Daarom werden de absolute en relatieve stabiliteit van alexithymie geëvalueerd in een pre-post design met controle op verschillende co-variaten. Deze studie is een onderdeel van dezelfde RCT, zoals gepresenteerd in hoofdstuk 2.

Absolute stabiliteit verwijst naar het (groeps)gemiddelde verschil over tijd, waarmee wordt aangegeven of en in welke richting een populatie verandert (Caspi, Roberts, & Shiner, 2005; Roberts, Walton, & Viechtbauer, 2006). Individuele verschillen in veranderingen kunnen echter wijzen op afwijkingen van deze (groeps) gemiddelde patronen. Relatieve stabiliteit wordt gedefinieerd als de mate waarin veranderingen tussen de personen onderling over een tijdsperiode onveranderd blijven (Roberts & DelVecchio, 2000). Dit is een nog belangrijkere indicatie voor de stabiliteit van een persoonlijkheidskenmerk dan de absolute stabiliteit. De mate van relatieve stabiliteit wordt gekenmerkt door de sterkte van de test-hertest correlatie. De TAS-20 en de EuropASI werden op de baseline en bij follow-up, drie maanden na een klinische CGT-behandeling met of zonder een SDM-interventie, afgenomen bij 187 verslaafde patiënten. Gemiddelde reducties van de totale TAS-20 en twee van de (sub)factoren lieten op groepsniveau zien, aangetoond m.b.v. t-testen, dat er geen absolute stabiliteit was. Ook bleek dat veranderingen in de mate van alexithymie verschilden voor laag, beperkt en hoog alexithyme patiënten. De meest opvallende verandering was een vermindering van alle TAS-20 scores in de hoog alexithyme groep, terwijl er daarentegen een toename van alle TAS-20 scores was in de laag alexithyme groep. Deze resultaten konden

niet worden verklaard door een daaraan gerelateerde verandering in angst- of depressieve symptomen, gemeten met de sectie "psychische en emotionele klachten" van de EuropASI.

Dit fenomeen lijkt op een regressie naar het gemiddelde en is op deze manier nog niet eerder beschreven in voorgaand onderzoek naar de stabiliteit van alexithymie. De relatieve stabiliteit van alexithymie, op basis van de intra class correlaties (ICC), was gematigd tot hoog voor de totale populatie. Echter de relatieve stabiliteit verschilde voor laag, beperkt en hoog alexithyme patiënten. In multivariate, lineaire regressie modellen was de verandering in de sectie "psychische en emotionele klachten" van de EuropASI, gerelateerd aan de verandering in alexithymie. Dit gold niet voor de behandelgerelateerde variabelen.

Gebaseerd op deze resultaten met betrekking tot de absolute en relatieve stabiliteit, concluderen we dat alexithymie in deze populatie van verslaafde patiënten deels een "state"-afhankelijk fenomeen is, maar geen stabiel persoonlijkheidskenmerk of "trait" (de Haan, Joosten, Wijdeveld, Boswinkel, van der Palen & De Jong, 2012a).

Voortbordurend op het onderwerp "state" of "trait" fenomeen, wordt in *hoofdstuk 5* de absolute en relatieve stabiliteit van alexithymie bij verslaafde patiënten gedurende de detoxificatie-fase onder de loep genomen. De daarmee corresponderende onderzoeksvraag was: *"is alexithymie gedurende detoxificatie een "state" of "trait" fenomeen bij (qua middelen) heterogeen verslaafde patiënten, gebaseerd op de absolute en relatieve stabiliteit van alexithymie, gecontroleerd voor onthoudingsymptomen, inclusief angst- en depressieve klachten?"*

De absolute en relatieve stabiliteit van alexithymie werden beoordeeld met behulp van de TAS-20 en haar subschalen bij 101 verslaafde patiënten op twee momenten gedurende een drie-weekse klinische detoxificatieperiode. Er werd gecontroleerd voor onthoudingsymptomen met behulp van de de Subjectieve Ontwenning Schaal (SOS) en voor kenmerken van persoonlijkheidstoornissen met de Assessment of the DSM-IV Personality Disorders Questionnaire (ADP-IV).

TAS-20 baseline data waren beschikbaar van 130 patiënten, van wie 42% hoog alexithym was. Hoog alexithyme patiënten verschilden niet van laag of beperkt alexithyme patiënten wat betreft geslacht, leeftijd, geboorteland, burgerlijke staat, werk, opleiding of type middelenafhankelijkheid. Hoog alexithyme patiënten lieten wel een grotere voorkeur voor polydruggebruik zien, vergeleken met beperkt en laag alexithyme patiënten. Hoog alexithyme patiënten scoorden hoger op de (totale) SOS-schaal, de SOS-angst en SOS-depressie onderdelen, in vergelijking met beperkt en laag alexithyme patiënten. Op alle ADP-IV onderdelen, lieten hoog alexithyme patiënten een hogere score zien dan laag alexithyme patiënten. De TAS-20 scores lieten ook een significante correlatie met deze onderdelen zien (ADP-IV totaal, cluster A-, cluster B-, cluster C kenmerken en de depressieve persoonlijkheid). De relatieve stabiliteit van de (gehele) TAS-20 en de subschalen was gematigd tot hoog en opmerkelijke verschillen, hoewel niet significant, waren aanwezig tussen op baseline laag, beperkt en hoog alexithyme patiënten, gebaseerd op de 95% betrouwbaarheidsintervallen.

Een geringe reductie van de (groeps)gemiddelden van de TAS-20 en één subschaal, toonden de afwezigheid van absolute stabiliteit. De alexithymie scores waren niet gerelateerd aan veranderingen in onthoudingssymptomen, inclusief angst- en depressieve klachten. De verschillen in verandering van alexithymie scores tussen laag, beperkt en hoog alexithyme patiënten van baseline tot follow-up, lieten, net als in het vorige hoofdstuk, een sterke regressie naar het gemiddelde zien.

De resultaten van dit hoofdstuk suggereren dat alexithymie, gemeten met de TAS-20, bij verslaafde patiënten gedurende detoxificatie, zowel "state" als "trait" eigenschappen bezit. Daarnaast blijkt er nu geen verband te zijn met veranderingen in angst- en depressieve symptomen, in tegenstelling tot de reultaten uit hoofdstuk 4 (de Haan, van der Palen, Wijdeveld, Buitelaar & De Jong, 2014).

In *hoofdstuk 6* werd de laatste onderzoeksvraag gesteld, namelijk: *"voorspelt een familiaire belasting voor alcohol problematiek (FBA) een hogere mate van alexithymie bij verslaafde patiënten, wanneer er wordt gecontroleerd voor een verstoord functioneren in de familie, c.q. het gezin?"*

Om meer inzicht te krijgen in de relatie tussen alexithymie en verslaving, onderzochten we of een familiaire kwetsbaarheid voor alcoholproblematiek samenhing met de ernst van alexithymie bij verslaafde patiënten. Gezien het feit dat alexithymie een mogelijke risicofactor vormt voor verslaving, zou meer inzicht in deze relatie de ontwikkeling van effectieve behandelingen voor verslaving kunnen ondersteunen. Maternale, paternale en samengestelde maten voor FBA werden ontwikkeld voor klinisch opgenomen verslaafde patiënten (n = 187), welke populatie al eerder in hoofdstuk 2 en 4 werd besproken. In vergelijking tot beperkt en laag alexithyme verslaafde patiënten, hadden hoog alexithyme patiënten vaker vaders met alcoholproblemen, in tegenstelling tot wat werd gevonden voor moeders met alcoholproblemen. De samengestelde FBA scores waren significant geassocieerd met de mate van alexithymie. Uiteindelijk bleek echter alleen de paternale FBA, onafhankelijk van een verstoord gezins functioneren, gerelateerd aan de mate van alexithymie. Dit gold met name voor de DIF-factor, gemeten met de TAS-20.

Als conclusie van dit hoofdstuk opperen we daarom dat alexithymie via een paternale lijn zou kunnen mediëren in de familiaire overdracht van verslaving aan alcohol of andere middelen, vanwege de relatie die we vonden tussen de paternale FBA en een hogere mate van alexithymie bij verslaafde patiënten (de Haan, Joosten, de Haan, Schellekens, Buitelaar, van der Palen & De Jong, 2013).

Sterke kanten en beperkingen van dit proefschrift

Een aantal sterke en vernieuwende onderdelen van dit proefschrift zijn het vermelden waard. Allereerst focusten we voor twee van de belangrijkste hypothesen, namelijk de relatie tussen alexithymie en behandeluitkomsten en de stabiliteit van alexithymie, op verschillende populaties en vonden vrijwel dezelfde uitkomsten. Een vernieuwend aspect van onze studie is dat we, na het verdelen van de gehele populatie in drie niveaus van alexithymie, zoals voorgesteld door Taylor e.a. (1997), deze niveaus vergeleken met betrekking tot hun absolute en relatieve stabiliteit. Een andere innovatie in dit proefschrift is het gebruik van een continue score voor de FBA in hoofdstuk 6, waarvan voor zover ons bekend, weinig gebruik wordt gemaakt. Een continue score werd berekend in de studie van Milne e.a. (2009), gebaseerd op de aanbevelingen van Vandeleur e.a. (2008). De FBA van elke deelnemer werd berekend op basis van het deel van de familieleden dat met de betreffende stoornissen bekend was. Eerste graads familieleden werden als een geheel en tweede graads familieleden werden als "half" familielid berekend (Milne e.a., 2008). Omdat onze familiegegevens uit de EuropASI kwamen, waarin gegevens worden uitgevraagd van een beperkt deel van de familieleden, hebben we gekozen voor een optelsom gebaseerd op de genealogische in plaats van de meer gebruikelijke medische classificatie. Een voordeel van de genealogische classificatie is dat de ouders meer invloed hebben op de totale som dan de andere eerste graads familieleden. Dit genealogische model is ook meer in overeenstemming met een cognitief model van intergenerationele overdracht van alcoholproblematiek (Campbell & Oei, 2010).

De resultaten van onze studies moeten echter ook beoordeeld worden in de context van een aantal beperkingen, inclusief de afwezigheid van systematisch urine- en/of bloedonderzoek om abstinentie aan te tonen. Dit geldt in het bijzonder de studies, die in de hoofdstukken 2,3 en 4 gepresenteerd zijn. Daarnaast hebben we angst- en depressieve klachten of de veranderingen daarin niet gemeten met meer sensitieve instrumenten als de Hamilton Depression Rating Scale (Hamilton, 1967), the BDI (Beck et al., 1961) of the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1983).

In de hoofdstukken 2,3 en 4 worden behandelinterventies besproken, die vooral gebaseerd zijn op het behandelen in groepen. We hebben niet gecontroleerd hoeveel tijd er besteed werd aan interventies en coaching van individuele patienten. Ook hebben we de verschillen in ambulante behandeling (na de klinische opname) niet gemeten. Ten gevolge hiervan kunnen we de mogelijkheid niet uitsluiten dat hoog alexithyme verslaafde patiënten meer individuele aandacht hebben gekregen dan laag alexithyme patiënten, wat onze resultaten zou kunnen hebben beïnvloed.

Hoewel de TAS-20 het meest gebruikte meetinstrument is voor alexithymie, is er kritiek op het feit dat het een zelfbeoordelingsinstrument is en zijn er mogelijk psychometrische (factor-analytische) tekortkomingen in alcoholafhankelijke populaties (Thorberg e.a., 2010). Een

aantal onderzoekers hebben de vraag gesteld of een zelfbeoordelingsinstrument wel adequaat tekortkomingen kan vaststellen, die alexithyme patiënten zichzelf misschien niet bewust zijn (Grabe et al., 2009; Kooiman, Spinhoven & Trijsburg, 2002). Daarom wordt er geadviseerd om alexithymie vast te stellen met behulp van meerdere methoden van onderzoek, inclusief een observatieschaal (Dorard et al., 2008).

In hoofdstuk 6, zijn het sociale en familiaire c.q. gezinsfunctioneren, zoals vastgesteld met behulp van de EuropASI, met het focus op de relatie tussen ouders en patiënten, eigenlijk niet specifiek genoeg om ongedeelde en gedeelde omgevingskenmerken goed te kunnen onderscheiden, daar deze onderdelen nogal globaal worden uitgevraagd. In hetzelfde hoofdstuk ontwikkelden we een nieuwe maat voor de totale FBA, die was gerelateerd aan de Early Onset of Alcoholisme (EOA), maar dat was niet het geval voor onze maat van de paternale FBA. Familiaire alcoholproblematiek met betrekking tot EOA is daarentegen juist kenmerkend voor de paternale lijn (Leggio, Kenna, Fenton, Bonenfant & Swift, 2009). Daarnaast maakten we in het kader van de familiaire belasting gebruik van gegevens, die we verkregen van onze patiënten en niet van de familieleden zelf.

Klinische implicaties

Lumley e.a. (2007) toonden aan dat alexithymie in het algemeen samenhangt met negatieve behandelresultaten, maar dat dit niet altijd het geval is (Rufer e.a., 2004; Spek, Nyklicek, Cuijpers & Pop, 2008). In drie studies, met zeer gestructureerde vormen van behandeling of op externe doelen gerichte interventies, was alexithymie geassocieerd met positieve behandeluitkomsten (Lumley e.a., 2007).

Onze resultaten bevestigen dat hoog alexithyme verslaafde patiënten kunnen profiteren van gestructureerde CGT. Deze patiënten profiteren mogelijk zelfs nog wat meer, indien een structurerende, motiverende aanpak zoals SDM wordt toegevoegd (de Haan e.a., 2011; hoofdstuk 2). Anders gezegd, de toevoeging van een dergelijke aanpak lijkt de behandelresultaten voor hoog alexithyme verslaafde patiënten te verbeteren. Deze verbetering is echter in iets mindere mate ook aanwezig bij laag of niet-alexithyme patiënten. Hoog alexithyme verslaafde patiënten profiteren dus van reguliere CGT op zijn minst zo goed als laag of niet-alexithyme verslaafde patiënten (de Haan e.a., 2011; de Haan e.a. 2012b; hoofdstuk 2 en 3).

De voorspellende waarde van de mate van alexithymie bij verslaafde patiënten, gemeten met de TAS-20, voor de start van een klinische behandeling is daarom van weinig klinisch of therapeutisch belang. Eerdere studies betwijfelden de validiteit van de TAS-20 binnen verslaafde populaties vanwege problematische factor analyses, in het bijzonder wat betreft de EOT-factor (Cleland e.a., 2005; Kooiman e.a., 2002; Thorberg e.a., 2010). Onze resultaten, inclusief het fenomeen van regressie naar het gemiddelde, gevonden in twee studies naar stabiliteit, (de Haan e.a., 2012a; de Haan e.a., 2014; hoofdstukken 4 en 5), bevestigen de zorgen over de validiteit van de TAS-20 in verslaafde populaties.

Concluderend blijkt het het weinig zin te hebben om de mate van alexithymie met de TAS-20 bij verslaafde patiënten in het kader van een klinische CGT-interventie te meten of om therapeutische aanpassingen te maken voor hoog alexithyme patiënten, gebaseerd op de uitslag van de TAS-20. Als er een keuze mogelijk is, dan wordt bij hoog alexithyme verslaafde patiënten een meer gestructureerde vorm van behandelen, aanbevolen. Deze aanpak heeft echter ook de voorkeur bij laag of niet-alexithyme patiënten, anders gezegd, alle verslaafde patiënten profiteren van een dergelijke behandeling.

Op basis van onze resultaten, zoals beschreven in hoofdstuk 2 tot en met 6, kan het belang van alexithymie concept bij verslaafde patiënten en verslaving betwijfeld worden en ik zal hierop kort ingaan.

In de eerste plaats heeft alexithymie als concept zijn oorsprong in het werken met patiënten met psychosomatische stoornissen (Sifneos, 1973) en vooralsnog vooral een face-validiteit op het terrein van verslaving. Een deel van de verslaafde patiënten vertoont (hoog) alexithyme kenmerken. Maar de consistent gevonden hoge prevalentie van alexithymie, gemeten met de TAS-20 en beschreven in dit proefschrift, komt in kwantiteit niet overeen met de beschrijving en karakterisering van verslaafde patiënten in de praktijk. Bovendien hebben we geen bevredigende verklaringen voor de veranderingen in alexithymie scores na verloop van tijd.

Alexithymie, gemeten met de TAS-20, heeft geen belangrijke klinische implicaties, hangt niet samen met behandelresultaten en vertoont geen optimale stabiliteit. Dit betekent dat de validiteit van het alexithymie concept of de TAS-20 als maat voor alexithymie bij verslaafde patiënten kan worden betwijfeld. Op basis van onze bevindingen kunnen we afraden om alexithymie of affect disregulatie bij verslaafde patiënten alleen met behulp van de TAS-20 te meten. Het is het echter te vroeg om alexithymie als concept voor het begrijpen van affect disregulatie bij verslaafde patiënten volledig te verwerpen, omdat we alexithymie alleen met de TAS-20 hebben gemeten. In de volgende paragraaf zal ik vervolgonderzoek aanbevelen om de validiteit van alexithymie bij verslaafde patiënten beter te kunnen beoordelen.

Aanbevelingen voor verder onderzoek

Vanwege de dubieuze validiteit van de TAS-20 in verslaafde populaties (Cleland e.a., 2005; Kooiman e.a., 2002; Thorberg e.a., 2010; de Haan e.a., 2012a; hoofdstukken 4 en 5), bevelen we met klem aan om onderzoek naar alexithymie in verslaafde populaties te verrichten met meerdere instrumenten, inclusief een observatieschaal (Dorard e.a., 2008).

Andere beschikbare instrumenten, die voor dit doel kunnen worden gebruikt, zijn de Bermond Vorst Alexithymia Questionnaire (BVAQ) (Vorst & Bermond, 2001), een andere zelfbeoordelingsschaal; de Toronto Structured Interview for Alexithymia (TSIA) (Bagby, Taylor, Parker & Dickens, 2006); en de Observer Alexithymia Scale (OAS) (Haviland, Warren, Riggs & Gallacher, 2001). De karakteristieke kenmerken van alexithymie zijn in deze instrumenten

verschillend geoperationaliseerd. Daarom is onderzoek met een combinatie van deze instrumenten in verslaafde populaties geïndiceerd om te kunnen beoordelen in hoeverre ze overeenkomen met de originele kenmerken van alexithymie, zoals gedefinieerd door Sifneos (1973). Bovendien is onderzoek nodig naar de constructvaliditeit van deze instrumenten, vooral naar de onderdelen die een beperkt fantasieleven en een extern georiënteerde denkwijze meten, omdat de TAS-20 hierin te kort schiet (Kooiman e.a., 2002; Thorberg e.a., 2010).

Een andere interessante optie met het oog op de constructvaliditeit van deze instrumenten en het alexithymie concept is het opzetten van kwalitatief onderzoek, gericht op het bestuderen van de veranderingen in alexithymie scores. Een onderzoek naar de klinische relevantie van veranderingen bij het meten van alexithymie kan de betekenis hiervan voor patiënten, familie, maar ook behandelaren verhelderen. Voor zover ons bekend heeft er bij verslaafde populaties geen onderzoek op deze manier plaatsgevonden. Het is niet duidelijk hoe veranderingen in affect regulatie in relatie tot alexithymie worden ervaren door patiënten, familie en behandelaren. Ook is niet duidelijk hoe groot die (subjectieve) veranderingen moeten zijn om door de verschillende alexithymie instrumenten gemeten te worden. Deze informatie kan ook helpen om de verschillen te verhelderen in het "state" en "trait" debat. Hoe bemerken patiënten, hun familieleden en behandelaren veranderingen in alexithymie gedurende periodes van (extreme) stress, angst of depressie in vergelijking met de ervaring van een meer stabiel, alexithym persoonlijkheidskenmerk?

Binnen de context van de absolute en relatieve stabiliteit zou het interessant zijn om veranderingen in alexithymie, ook wat betreft het fenomeen van regressie naar het gemiddelde, te vergelijken met veranderingen in andere persoonlijkheidsmodellen zoals de big five of five-factor model (Costa & McCrae, 1992). Als de veranderingen in de stabiliteit van alexithymie en één of meer van deze vijf factoren sterk aan elkaar gerelateerd zijn, pleit dat voor alexithymie als een 'trait'.

Om te bepalen in hoeverre onze bevindingen met betrekking tot de absolute en relatieve stabiliteit van alexithymie toegeschreven kunnen worden aan het gebruik van de TAS-20, stellen we voor om in de toekomst onderzoek naar het stabilitieitsconcept te doen met de eerder genoemde instrumenten, zoals de Bermond Vorst Alexithymia Questionnaire (Vorst & Bermond, 2001), de Observer Alexithymia Scale (Haviland et al., 2001), en de Toronto Structured Interview for Alexithymia (Bagby et al., 2006).

Doordat voor alexithymie de betrokkenheid van verscheidene hersendelen, zoals het corpus callosum, de cortex cinguli, amygdala, orbitofrontale cortex en insula, in directe of mediërende zin met neuroimaging is aangetoond (Wingbermühle, Theunissen, Verhoeven, Kessels & Egger, 2012), bevelen we aan om de studies naar de stabiliteit van alexithymie te combineren met neuroimaging en neuropsychologische of neurobiologische testen, gericht op de bovengenoemde hersendelen. Dit kan ook het onderzoek stimuleren naar aspecten van alexithymie, die overlappen met andere stoornissen dan verslaving. Alexithymie is niet alleen bij verslaving vaak aanwezig, maar ook bij angst-, autisme spectrum-, eet-, stemming-, persoonlijkheid- en

somatoforme stoornissen (Taylor e.a., 1997). Een voorbeeld hiervan is onderzoek dat gericht is op de overeenkomsten en verschillen van patiënten met autisme spectrum stoornissen en (de mate van) alexithymie (Bird et al., 2010; Bird & Cook, 2013). Verschillen en overeenkomsten in alexithymie tussen psychiatrische stoornissen, gemeten met de verschillende alexithymie instrumenten en gecombineerd met neurobiologische en –psychologische testen, kunnen helpen om de constructvaliditeit van alexithymie te beoordelen c.q. verbeteren. Vanwege de overlap in de mate van alexithymie bij psychiatrische stoornissen, is het ook interessant om naar alexithymie te kijken als een endofenotype. Dit laatste verwijst naar een mediërend concept tussen genotype en fenotype, zoals bijvoorbeeld het begrip impulsiviteit. Mogelijk krijgen endofenotypes een plaats in de reorganisatie van de psychiatrische nosologie.

Om onze bevinding uit hoofdstuk 6 dat alexithymie de familiaire overdracht van alcoholproblematiek of andere verslavingen zou kunnen mediëren te valideren, zou strucutural equation modeling toegepast moeten worden op grotere datasets, die ook tweelingen en zo veel mogelijk familieleden bevatten. Deze benadering zou gegevens op moeten leveren over het middelengebruik en de mate van alexithymie van alle familieleden, waarmee meer causale modellen kunnen worden onderzocht, die de relatie tussen middelengebruik en alexithymie verklaren. Bovendien zou deze aanpak kunnen helpen om kandidaat-genen te testen voor associaties tussen genetische polymorfismen, die gerelateerd zijn aan alexithymie en verslavingsproblematiek (Ham e.a., 2005; Walter, Montag, Markett & Reuter, 2011).

Deze aanbevelingen voor toekomstig onderzoek geven aan dat alexithymie, als een vorm van verstoorde affectregulatie bij verslaving, nog steeds een uitdagend onderwerp voor onderzoek is. De uitkomsten van toekomstige studies, zoals meer inzicht in verslaving of aanwijzingen voor alexithymie als een relevante risicofactor voor verslaving, is echter moeilijk te voorspellen. Tot op heden heeft het alexithymie concept ten aanzien van deze twee aspecten te weinig resultaten laten zien. Alexithymie zal alleen een belangrijk klinisch concept bij verslaving blijken te zijn, als de hierboven vermelde, op meerdere methodieken gebaseerde, wijze van meten oplevert dat alexithymie het ontstaan, de ernst en/of de behandeluitkomsten, zoals de kans op terugval, van verslaving beïnvloedt. Er van uitgaande dat het onderzoek naar alexithymie gaat helpen om affectregulatie beter te begrijpen, en op die manier de behandeling van verslaafde patiënten kan verbeteren, blijft het een onderwerp dat van belang is.

Referenties

Bagby, R.M., Parker, J.D. & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale--I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38, 23-32

Bagby, R.M., Taylor, GJ., Parker, J.D.A. & Dickens, S.E.(2006) The development of the Toronto Structured Interview for Alexithymia: Item selection, factor structure, reliability and concurrent validity. Psychotherapy and psychosomatics, 75 (1), 25-39

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., Erbaugh, J., 1961. An inventory for measuring depression. Archives of General Psychiatry 4, 561–571.

Bird, G., Silani, G., Brindley, R., White, S., Frith, U. & Singer, T. (2010). Empathic brain responses in insula are modulated by levels of alexithymia but not autism. Brain, 133, 1515-1525

Bird, G. & Cook, R. (2013). Mixed emotions: the contribution of alexithymia to the emotional symptoms of autism. Translational Psychiatry, 3, e285; doi:10.1038/tp.2013.61

Campbell, J.M. & Oei, T.P. (2010). A cognitive model for the intergenerational transference of alcohol use behavior. Addictive behaviors, 35, 73-83.

Caspi, A., Roberts, B.W. & Shiner, R.L. (2005). Personality development: stability and change. *Annual Review of Psychology*, 453-484.

Cleland, C., Magura, S., Foote, J., Rosenblum, A. & Kosanke, N. (2005). Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. Journal of Psychosomatic Research 58, 299–306.

Costa, P.T.,Jr. & McCrae, R.R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) manual. Odessa, FL: Psychological Assessment Resources.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P.B., van der Palen, J. & De Jong, C.A.J. (2011). Cognitive behavioral treatment is as effective in high- as in low-scoring alexithymic patients with substance-related disorders. Psychotherapy and Psychosomatics 80, 254-255.

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P., van der Palen., J. & De Jong, C.A.J. (2012a). Alexithymia is not a stable personality trait in patients with substance use disorders. Psychiatry Research 198, 123-129.

de Haan, H.A., Schellekens, A.F., van der Palen, J., Verkes, R.J., Buitelaar, J.K. & De Jong, C.A. (2012b). The level of alexithymia in alcohol-dependent patients does not influence outcomes after inpatient treatment. American Journal of Drug and Alcohol Abuse 38, 299-304.

de Haan, H.A., Joosten, E.A.G, de Haan, L., Schellekens, A.F., Buitelaar, J.K., van der Palen, J. & De Jong, C.A.J. (2013). A family history of alcoholism relates to alexithymia in substance use disorder patients. Comprehensive Psychiatry 54 (7), 911-917.

de Haan, H.A., van der Palen, J., Wijdeveld, A.G.M., Buitelaar, J.K. & De Jong, C.A. (2014) Alexithymia in patients with substance use disorders: state or trait? Psychiatry Research 216, 137-145.

de Timary, P., Luts, A., Hers, D. & Luminet, O. (2008) Absolute and relative stability of alexithymia in alcoholic inpatients undergoing alcohol withdrawal: Relationship to depression and anxiety. *Psychiatry Research*, 157,105-113.

Dorard, G., Berthoz, S., Haviland, M.G., Phan, O., Corcos, M. & Bungener, C. (2008). Multimethod alexithymia assessment in adolescents and young adults with a cannabis use disorder. Comprehensive Psychiatry, 49, 585-592.

Ham, B.J., Lee, M.S., Lee, Y.M., Kim, M.K., Choi, M.J., Oh, K.S., et al. (2005). Association between the catechol O-methyltransferase Val108/158Met polymorphism and alexithymia. Neuropsychobiology, *52*, 151-4.

Hamilton, M., 1967. Development of a rating scale for primary depressive illness. The British Journal of Social and Clinical Psychology 6, 278–296.

Haviland, M.G., Macmurray, J.P. & Cummings, M.A. (1988). The relationship between alexithymia and depressive symptoms in a sample of newly abstinent alcoholic inpatients. *Psychotherapy and Psychosomatics*, 49, 37-40.

Haviland, M.G., Warren, W.L., Riggs, M.L. & Gallacher, M. (2001). Psychometric properties of the Observer Alexithymia Scale in a clinical sample. Journal of Personality Assessment 77, 176–186.

Kooiman, C.G., Spinhoven, P. & Trijsburg, R.W.(2002) The assessment of alexithymia - a critical review of the literature and a psychometric study of the Toronto alexithymia scale-20. Journal of Psychosomatic Research, 53, 1083-1090.

Leggio, L., Kenna, G.A., Fenton, M., Bonenfant, E., & Swift, R.M. (2009). Typologies of alcohol dependence. From Jellinek to genetics and beyond. Neuropsychological Review, 19, 115-29

Lindsay, J. &, Ciarrochi, J. (2009). Substance abusers report being more alexithymic than others but do not show emotional processing deficits on a performance measure of alexithymia. Addiction Research & Theory, 17, 315-321.

Lumley, M.A., Neely, L.C. & Burger, A.J. (2007). The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. Journal of Personality Assessment 89, 230-246.

Milne, B.J., Caspi, A., Harrington, H., Poulton, R., Rutter, M. & Moffitt, T.E. (2009). Predictive value of family history on severity of illness: the case for depression, anxiety, alcohol dependence, and drug dependence. Archives of General Psychiatry, 66 (7), 738 -747

Parker, J.D.A., Keefer, K.V., Taylor, G.J. & Bagby, R.M. (2008) Latent structure of the alexithymia construct: a taxonomic investigation. *Psychological assessment*, 20, 385-396.

Pinard, L., Negrete, J.C., Annable, L. & Audet, N. (1996). Alexithymia in substance abusers - Persistence and correlates of variance. *American Journal on Addictions*, 5,32-39.

Roberts, B.W. & DelVecchio, W.F. (2006). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological Bulletin,* 126, 3-25.

Roberts, B.W., Walton, K.E. & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological Bulletin*, 132, 1-25

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112.

Rufer, M., Hand, I., Braatz, A., Alsleben, H., Fricke, S. & Peter, H. (2004). A prospective study of alexithymia in obsessive-compulsive patients treated with multimodal cognitive-behavioral therapy. Psychotherapy and Psychosomatics,73, 101-106.

Spek, V., Nyklicek, I., Cuijpers, P. & Pop, V. (2008) Alexithymia and cognitive behaviour therapy outcome for subthreshold depression. Acta Psychiatrica Scandinavica 2008, 118, 164-167.

Spielberger, C.D., Gorssuch, R.L., Lushene, P.R., Vagg, P.R., & Jacobs, G.A (1983). Manual for the State-Trait Anxiety Inventory. Consulting Psychologists Press, Inc.

Taylor, G. J., Bagby, R. M., Parker, J. D. A., & (1997). *Disorders of affect regulation*. Cambridge: Cambridge university press.

Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics, 73*(2), 68-77.

Thorberg, F.A., Young, R.M., Sullivan, K.A., Lyvers, M., Hurst, C., Connor, J.P. & Feeney, G.F. (2010). A confirmatory factor analysis of the Toronto Alexithymia Scale (TAS-20) in an alcohol-dependent sample. Psychiatry Research, 178(3), 565–567.

Vandeleur, C.L., et al. (2008) Inter-informant agreement and prevalence estimates for substance use disorders: direct interview versus family history method. Drug and Alcohol Dependence, 92, 9-19.

van Rossum, L.G.M., Laheij, R.J.F., de Doelder, M.S., de Jong, C.A.J. & Jansen, J. (2004). Prevalence of gastrointestinal symptoms in alcoholics and the relationship with alexithymia. Psychiatry Research,129, 107-112

Vorst, H.C.M., Bermond, B., 2001. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. Personality and Individual Differences 30, 413–43

Walter, N.T., Montag, C., Markett, S.A. & Reuter, M. (2011). Interaction effect of functional variants of the BDNF and DRD2/ANKK1 gene is associated with alexithymia in healthy human subjects. Psychosomatic Medicine, 73, 23-8.

Wingbermühle, E., Theunissen, H., Verhoeven, W.M.A., Kessels, R.P.C. & Egger, J.I.M. (2012). The neurocognition of alexithymia: evidence from neuropsychological and neuroimaging studies. Acta Neuropsychiatrica, 24, 67–80

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Curriculum Vitae

Hein de Haan (01-01-1956 te Haarlem) volgde het Gymnasium B in Eindhoven en behaalde het artsexamen in 1982 te Utrecht. Tijdens zijn geneeskunde studie was hij voorzitter van de Medische Studenten Faculteit Vereniging (MSFU), lid van de Faculteitsraad en vrijwilliger en medeoprichter van een gezondheidswinkel en een wegloophuis voor psychiatrische patiënten te Utrecht. Hij werkte als arts op de Eerste Hulp van het Wilhelmina Gasthuis te Amsterdam en als AGNIO chirurgie in het Juliana ziekenhuis te Amsterdam. In 1985 rondde hij de huisartsenopleiding af en werkte vervolgens als huisarts, verslavingsarts en docent voor de opleiding tot ziekenverzorging in psychiatrisch ziekenhuis Bloemendaal te Den Haag. Gedurende die periode was hij eveneens werkzaam voor de crisisdienst van RIAGG Delft-Westland, Stichting de Bulldog ("Keetje Tippel") te Rotterdam en als politiearts te Den Haag. Hij sloot in 1989 de opleiding tot arts-acupuncturist af (N.A.A.S.). Van 1990 tot 1995 volgde hij de specialisatie tot psychiater/psychotherapeut bij het Haags-Leids opleidingsconsortium (opleiders: Prof. Dr. W.A. Nolen en Prof dr. E. Hoencamp) met als keuzestage een jaar verslavingspsychiatrie te Den Haag (drs. C.W. van der Meer en drs. B. Mostert). Als psychiater werkte hij van 1995 tot 1999 bij het Twents Psychiatrisch Ziekenhuis, later gefuseerd tot Mediant. Vanaf 1997 werkte hij als psychiater bij het Instituut Verslavingszorg Oost Nederland (IVON), later opgegaan in Tactus Verslavingszorg. In 1999 werd hij Eerste geneeskundige van Tactus, sinds 2010 in combinatie met de functie van directeur zorg. Van 1999 tot 2007 werkte hij als psychiater en later ook als hoofd van de Forensisch Psychiatrische Dienst, later het NIFP te Almelo. Tot 2010 was hij als stafmedewerker verbonden aan het NIFP. In 2001 werd hij beëdigd als rapporteur Pro Justitia en hij staat ingeschreven in het register van gerechtelijk deskundigen (NRGD). Hij is sinds de start in 2007 als docent verbonden aan de opleiding tot verslavingsgeneeskundige, Master in Addiction Medicine (MIAM), vanaf 2011 als hoofddocent. Van 2001 tot 2009 was hij secretaris en vanaf 2009 voorzitter van het Platform Eerste Geneeskundigen in de Verslavingszorg. Ook was hij enige jaren als lid verbonden aan het bestuur van de sectie verslavingspsychiatrie van de NVvP. Hij is lid van de programmaraad van het Expertisecentrum Forensische Psychiatrie (EFP). Sinds de oprichting in 1999 is hij verbonden aan het NISPA (Nijmegen Institute for Scientist-Practitioners in Addiction). Naast alexithymie, werkt hij in NISPA-verband mee aan onderzoek naar traumagerelateerde stoornissen (samenwerking met Lisa Najavits: Seeking Safety), forensische verslavingszorg/psychiatrie en E-health. Hij is getrouwd met Marianne de Haan-Voerman en heeft drie kinderen: Lydia (1986), Maarten (1989) en Laura (1992).

Publicaties

Relatief lage HIV-prevalentie onder drugsgebruikers in Den Haag ondanks riskant spuitgedrag H.A. de Haan, J.A.R van den Hoek, H.J.A. van Haastrecht, C.W. van der Meer, R.A. Countinho Nederlands Tijdschrift voor Geneeskunde 1991: 1135: 218-221

Verslavingen (Drugs) in Psychiatrie, Practicum Huisartsgeneeskunde H.A. de Haan, J.B.H.M. Dupont, P.M.J.M. Jennen en Ch.Kaplan Bohn Stafleu Van Loghum, Houten/Diegem 1997

Cue Reactivity and Effects of Cue Exposure in Abstinent Posttreatment Drug Users I.H.A. Franken, H.A. de Haan, C.W. van der Meer, P.M.J. Haffmans en V.M. Hendriks. Journal of Substance Abuse Treatment, Vol 16, No 1, pp. 81-85, 1999

Cue exposure bij opiaatafhankelijkheid. H.A. de Haan, I.H.A. Franken, C.W. van der Meer, V.M. Hendriks en P.M.J. Haffmans. Gedragstherapie, 32, 205-217, september 1999

Eerste rapportage onderzoek nazorg vuurwerkramp GGZ. Noorthoorn, E.O., de Haan, H.A., Banneke, J.J., Kraan, H.F. STOOGG / VWS. April 2003

Snel afkicken kan: H.A. de Haan, MGv, 11, 965-969, november 2004

Does e-therapy for problem drinking reach hidden populations? Postel MG, de Jong CAJ, de Haan HA. American Journal of Psychiatry 2005; 162(12), 2393

Eindrapport onderzoek onder volwassenen in behandeling bij Mediant Nazorg Vuurwerkramp. Noorthoorn, E.O., de Haan, H.A., van Stiphout W.A.H.J. en Havenaar J.M. STOOGG / VWS 2006

Adolescents consommateurs excessifs de cannabis: Développement d'un module de self-help par Internet (2008); Marloes G. Postel, MSc. Margreet Jansma, MSc. Hein A. de Haan, M.D. Jorne J.J. Grolleman, Ir., MSc. Cor A.J. DeJong, M.D., Ph.D. In Cannabis-Approaches Therapeutiques. Carrefour des psychotherapies (de Boeck)

E-therapy for alcohol problems, drug abuse and mental health problems: A systematic review of literature; M.G. Postel, H.A. de Haan, C.A.J. de Jong, Telemedicine and E-health (2008): vol. 14, no. 7: September 2008

Verslavingen (Drugs) in Psychiatrie, Praktische Huisartsgeneeskunde; 2e herziene druk H.A. de Haan, J.B.H.M. Dupont, C.A.J. de Jong en Ch.Kaplan. Bohn Stafleu Van Loghum, Houten december 2007

Verslaving in de forensische psychiatrie, de ISD, de Wegenverkeerswet en de rol van het psychiatrisch rapport. Van Bueren L., de Haan H.A. en Noorlander E. in Gedragskundige rapportage in het strafrecht. Wolters Kluwer, Deventer 2008

Co-morbiditeit (hoofdstuk 14). Hein de Haan en Ben Blansjaar in Stoornis en delict: handboek psychiatrische en psychologische rapportage in strafzaken. Elsevier / De Tijdstroom 2008

Misbruik en afhankelijkheid van psychoactieve stoffen (hoofdstuk 5). Hein de Haan, Cor de Jong en Corine Roeters in Stoornis en delict: handboek psychiatrische en psychologische rapportage in strafzaken. Elsevier / De Tijdstroom 2008

Effectevaluatie van de strafrechtelijke opvang van verslaafden (SOV) vanuit een geneeskundig perspectief. H. A. de Haan. Sancties 2008/6: 337-348

Omvang van de verslavingsproblematiek bij justitiabelen (hoofdstuk 2): Hein de Haan. In Richtlijn Medicamenteuze zorg aan gedetineerde verslaafden. DJI/CBO 2008

State of the art van medicamenteuze behandeling (hoofdstuk 3): Hein de Haan en Marleen Arends. In Richtlijn Medicamenteuze zorg aan gedetineerde verslaafden. DJI/CBO 2008

Indicaties voor het starten, onderhouden en afbouwen van opiaatvervangende middelen (hoofdstuk 4): Michel Westra, Hein de Haan en Marleen Arends. In Richtlijn Medicamenteuze zorg aan gedetineerde verslaafden. DJI/CBO 2008

Andere medicamenten: adjuvante medicatie en terugvalpreventie (hoofdstuk 7).Marleen Arends, Tanja Cucic-Malesevic en Hein de Haan. In Richtlijn Medicamenteuze zorg aan gedetineerde verslaafden. DJI/CBO 2008

De scientist-practitioner in de polder: polsstokspringer of bruggenbouwer.Cor A. de Jong, Lisette E.A.P. Oliemeulen en Hein A. de Haan in De klinisch psycholoog als scientist-practitioner: opstellen over de verhouding van wetenschap en praktijk. C. van Nijnatten & g. Hutschemaekers (red.) MGv / RUN november 2008

De Jong CAJ, De Haan HA, Van de Wetering BJM. Verslavingsgeneeskunde: Neurofarmacologie, psychiatrie en somatiek (red.). Assen: Van Gorcum; 2009.

Postel MG, Ter Huurne E, Haan HA de, De Jong CAJ. Alcoholdebaas.nl: Drie jaar online hulpverlening voor probleemdrinkers. MGv. 2009, 64 (5):357-372.

Kamal R, Van Hoek AFM, Haan HA de, De Jong CAJ. Stoppen met Gammahydroxybutyric acid (GHB), hoe doe je dat? In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

De Haan HA, De Jong CAJ. Alexithymia en alcoholverslaving: consequenties voor de behandeling. In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

Reurich C, Marjus W, De Haan HA. Verslaving en angststoornissen tegelijkertijd behandelen? In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

Van der Vorst L, De Haan HA. De behandeling van PTSS en verslaving: een uitdagende combinatie. In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

Buddingh-Knol C, Wijdeveld T, De Haan HA. Neuropsychiatrische symptomen van hepatitis C. In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

Voskamp M, Lameris J, Van den Brink W, De Haan HA. Pulmonaal lijden bij opiaatverslaafden: vroegtijdig herkennen voorkomt veel problemen! In: CAJ DeJong, BJM van de Wetering, HA de Haan (red.) Verslavingsgeneeskunde: Psychofarmacologie, psychiatrie en somatiek. Assen: Van Gorcum; 2009.

Marloes G. Postel, MSc, Evelien A.G. Joosten, PhD, Hein A. de Haan, MD, Elke D. ter Huurne, MSc, Eni S. Becker, PhD, Cor A.J. de Jong, MD, PhD. Therapeutic alliance in Addiction Health Care: A strong relationship in e-therapy and face-to-face treatment. Submitted

Marloes G. Postel, Hein A. De Haan and Cor A. J. De Jong. Evaluation of an E-Therapy Program for Problem Drinkers: A Pilot Study. Substance Use & Misuse: October 2010, Vol. 45, No. 12, Pages 2059-2075

Arends, M. T. , de Haan, H. A. and van 't Hoff, G.I.C.M.(2009) 'First Dutch national guidelines - pharmacological care for detained opioid addicts', International Journal of Prisoner Health, 5: 4, 192 — 200

Marleen Arends, Hein de Haan en Gerda van 't Hoff. Medicamenteuze zorg aan gedetineerde verslaafden. Tijdschrift verslaving: oktober 2009

Westra M, de Haan HA, Arends MT, van Everdingen JJ, Klazinga NS; Richtlijn " Medicamenteuze zorg aan gedetineerde verslaafden" Centraal Begeleidings Orgaan. Ned Tijdschr Geneeskd. 2009; 153:A726.

H.A. de Haan en C.A.J. de Jong. Hoofdstuk "Psycho-actieve middelen" in Diagnose en therapie. Praktische huisartsgeneeskunde onder redactie van: J.J.E. van Everdingen, J.H. Glerum en Tj. Wiersma. Bohn Stafleu van Loghum: Houten 2010.

H.A. de Haan, R.P.H. Beijaert en C.A.J. de Jong. Hoofdstuk "Psycho-actieve middelen" in Diagnose en therapie. Praktische huisartsgeneeskunde onder redactie van: J.J.E. van Everdingen, J.H. Glerum en Tj. Wiersma. Bohn Stafleu van Loghum: Houten 2011.

H.A. de Haan, R.P.H. Beijaert en C.A.J. de Jong. Hoofdstuk "Psycho-actieve middelen" in Diagnose en therapie. Praktische huisartsgeneeskunde onder redactie van: J.J.E. van Everdingen, J.H. Glerum en Tj. Wiersma. Bohn Stafleu van Loghum: Houten 2012/2013.

Margreet van der Meer-Jansma, Hein de Haan en Cor de Jong. Nederlandse vertaling en bewerking van Lisa Najavits "Seeking safety" : Handboek behandeling trauma en verslaving. Bohn Stafleu van Loghum: Houten 2010.

Noorthoorn EO, Havenaar JM, de Haan HA, van Rood YR, van Stiphout WA. Mental health service use and outcomes after the Enschede fireworks disaster: a naturalistic follow-up study. Psychiatr Serv. 2010 Nov;61(11):1138-43.

Postel MG, de Haan HA, ter Huurne ED, Becker ES, de Jong CA. Effectiveness of a web-based intervention for problem drinkers and reasons for dropout: randomized controlled trial. J Med Internet Res. 2010 Dec 16;12(4):e68

de Haan, H.A., Joosten, E.A.G., Wijdeveld, A.G.M., Boswinkel, P.B., van der Palen, J. & De Jong, C.A.J. (2011). Cognitive Behavioural Treatment Is as Effective in High- as in Low-Scoring Alexithymic Patients with Substance-Related Disorders. Psychotherapy and Psychosomatics, 80, 254-255

Postel MG, de Haan HA, Ter Huurne ED, Becker ES, de Jong CA. Characteristics of problem drinkers in e-therapy versus face-to-face treatment. Am J Drug Alcohol Abuse. 2011 Nov;37(6):537-42.

Lammers, S., Nijman, H., de Haan, H., Soe-agnie, S. & Bakkum, G. (2012). *De RIVJU: Een conceptinstrument voor de risicotaxatie van veslaafde justitiabelen*. Nijmegen: Academisch Centrum Sociale Wetenschappen, Radboud Universiteit (i.s.m. Tactus Verslavingszorg & Expertisecentrum Forensische Psychiatrie).

Postel MG, de Haan HA, ter Huurne ED, van der Palen J, Becker ES, de Jong CA. Attrition in web-based treatment for problem drinkers. J Med Internet Res. 2011 Dec 27;13(4).

de Haan, H.A., Schellekens, A.F., van der Palen, J., Verkes, R.J., Buitelaar, J.K. & De Jong, C.A. (2012a). The level of alexithymia in alcohol-dependent patients does not influence outcomes after inpatient treatment. American Journal of Drug and Alcohol Abuse, 38(4), 299-304.

de Haan H, Joosten E, Wijdeveld T, Boswinkel P, van der Palen J, De Jong C. Alexithymia is not a stable personality trait in patients with substance use disorders. Psychiatry Res. 2012 Jun 30;198(1):123-9.

Gamma-hydroxybutyrate detoxification by titration and tapering. de Jong CA, Kamal R, Dijkstra BA, de Haan HA. Eur Addict Res. 2012;18(1):40-5. Epub 2011 Dec 3.

De Haan L.; de Haan H. A.; Olivier B.; et al. Dutch student survey: alcohol and energy drink consumption, alcohol related consequences and risk taking. Alcoholism-Clinical and Experimental Research Volume: 36 Special Issue: SI Supplement: 1 Pages: 54A-54A. Jun 2012

De Haan L.; de Haan H. A.; Olivier B.; et al. Dutch student survey: reasons for energy drink consumption and mixing with alcohol. Alcoholism-Clinical and Experimental Research Volume: 36 Special Issue: SI Supplement: 1 Pages: 287A-287A. Jun 2012

de Haan L, de Haan HA, Olivier B, Verster JC Alcohol mixed with energy drinks: methodology and design of the Utrecht Student Survey.. Int J Gen Med. 2012;5:889-98.

de Haan L, de Haan HA, van der Palen J, Olivier B, Verster JC. Effects of consuming alcohol mixed with energy drinks versus consuming alcohol only on overall alcohol consumption and negative alcohol-related consequences. Int J Gen Med. 2012;5:953-60.

Kok T, de Haan HA, van der Velden HJ, van der Meer M, Najavits LM, de Jong CA Validation of two screening instruments for PTSD in Dutch substance use disorder inpatients.. Addict Behav. 2012 Oct 31;38(3):1726-1731.

Ter Huurne ED, Postel MG, de Haan HA, Drossaert CH, DeJong CA. Web-based treatment program using intensive therapeutic contact for patients with eating disorders: before-after study. J Med Internet Res. 2013 Feb 4;15(2):e12

de Haan HA, Joosten EA, de Haan L, Schellekens AF, Buitelaar JK, van der Palen J, De Jong CA. A family history of alcoholism relates to alexithymia in substance use disorder patients. Compr Psychiatry. 2013, 54 (7), 911-917.

Kok T, de Haan HA, van der Meer M, Najavits LM, DeJong CA. Efficacy of "seeking safety" in a Dutch population of traumatized substance-use disorder outpatients: study protocol of a randomized controlled trial. BMC Psychiatry. 2013 Jun 4;13:162

Ter Huurne ED, Postel MG, de Haan HA, Dejong CA. Effectiveness of a web-based treatment program using intensive therapeutic support for female patients with bulimia nervosa, binge eating disorder and eating disorders not otherwise specified: study protocol of a randomized controlled trial. BMC Psychiatry. 2013 Nov 16;13(1):310.

H.A. de Haan en E. Noorlander (2013). Verslaving in de forensische psychiatrie, de ISD, de Wegenverkeerswet en de rol van het psychiatrisch rapport. Gedragskundige rapportage in het strafrecht. Kluwer.

Gerdien de Weert-van Oene, Cor de Jong, Veerle Raes en Hein de Haan (2013). Probleemidentificatie, diagnostiek en monitoring bij dubbele diagnose. Handboek Dubbele Diagnose. De Tijdstroom.

Tim Kok, Leon van Rens en Hein de Haan (2013). Posttraumatische stressstoornis en verslaving. Handboek Dubbele Diagnose. De Tijdstroom.

Lammers, S.M.M, Soe-Agnie, S.E., de Haan, H.A., Bakkum, G.A.M., Pomp, E.R., en Nijman, H. J.M. (2013). Middelengebruik en criminaliteit: een overzicht. Tijdschrift voor Psychiatrie 2014;56(1):32-9.

de Haan, H.A., van der Palen, J., Wijdeveld, A.G.M., Buitelaar, J.K. & De Jong, C.A. (2014) Alexithymia in patients with substance use disorders: state or trait? Psychiatry Research 216, 137-145.

Stellingen behorende bij het proefschrift

Alexithymia in patients with substance use disorders

Hein de Haan, 13 juni 2014, Radboud Universiteit Nijmegen

1. Alexithymie, gemeten met de Toronto Alexithymia Scale-20 (TAS-20) komt vaak voor bij verslaafde patiënten (dit proefschrift).

2. De mate van alexithymie, gemeten met de TAS-20, heeft bij verslaafde patiënten geen invloed op de resultaten van een cognitief-gedragstherapeutische verslavingsbehandeling (dit proefschrift).

3. Alexithymie heeft bij verslaafde patiënten zowel "state" als "trait" kenmerken (dit proefschrift).

4. Bij het bepalen van de absolute en relatieve stabiliteit van een persoonlijkheidskenmerk is het aan te bevelen om dit kenmerk in gradaties, bijvoorbeeld hoog, midden en laag, in te delen en de stabiliteit tussen deze gradaties te vergelijken. Dit kan onder andere een regressie naar het gemiddelde opleveren, die anders wordt gemist (dit proefschrift).

5. Alexithymie, gemeten met de TAS-20, is geen stabiel persoonlijkheidskenmerk bij verslaafde patiënten (dit proefschrift).

6. Het meten van alexithymie met alleen de TAS-20 in het kader van een behandeling voor verslaving heeft weinig zin (dit proefschrift).

7. Alexithymie kan via een paternale lijn mediëren in de familiaire overdracht van verslaving aan alcohol of andere middelen (dit proefschrift).

8. Alexithymie kan als valide concept bij verslaving worden betwijfeld, maar dient eerst met andere instrumenten dan de TAS-20 te worden onderzocht, voordat het in meer definitieve zin wordt ontkracht (dit proefschrift).

9. Promoveren moet je zo snel mogelijk na een doctoraal of master studie doen en er niet te lang mee wachten.

10. De verslavingsarts KNMG moet in de verslavingszorg en bij het behandelen van verslaving zo snel mogelijk door alle partijen als hoofdbehandelaar worden erkend en zeker door de Nederlandse Vereniging voor Psychiatrie (NVvP).

11. Als er destijds (zeventiger en tachtiger jaren van de vorige eeuw) vanuit de officiële psychiatrie meer toenadering was gezocht naar de anti-psychiatrische beweging dan had dat geholpen bij het begrip voor en maatschappelijke acceptatie van de (biologische) psychiatrie.

12. Het is onterecht dat de Kinks niet dezelfde waardering krijgen en hebben gekregen als de Beatles en de Stones. Hun invloed op de ontwikkeling van allerlei muziekstijlen is minstens even groot en hun teksten waren stukken beter.